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PD

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```

00010      DPG 327ED
00020      DUT 3278E
00030      OPEN:EDU #0110
00040      ;Print message "SAM COUPE"
00050      ;*****
00070      ;open stream 2
00080
00090      LD  A,3
00100      CALL OPEN
00110      ;Print the message starting in register HL
00120      LD  HL,SAMCOUPE
00130      LODD  A,(HL)
00140      RHD  A
00150      RET  2
00160      RLD  16
00170      RCD  HL
00180      INC  HL
00190      JR  LODD
00200      RET
00210      SAMCOUPE:DB "SAM Coupe"
    
```

SC ASSEMBLER is a very easy to use editor Assembler, just type in the text even with no spacing and SC ASSEMBLER will reposition and do a comprehensive check, if any errors displays in clear english what is wrong, easy enough for the beginner, yet powerful enough for top programmers who have already used my Assembler to program Top Sam games. With Source files to get you started and a professional written 45 page Manual you can't go far wrong.

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PRODUCTION

Designed and typeset in-house using
Commodore Amigas running the
Pre-Press WED system.

Sinclair & SAM Computing, incorporating +3
Contact, is published bi-monthly by Garner
Designs Publishing, 57 Lovers Walk, Dunstable,
Bedfordshire, LU5 4BG. No material may be
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Dunstable, Bedfordshire, LU5 4BG.
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PRODUCTS

S&SC welcomes any information on new and existing products
for coverage in the news and reviews pages of the magazine. All
information and/or review material should be addressed
to the Editor.

ARTICLES

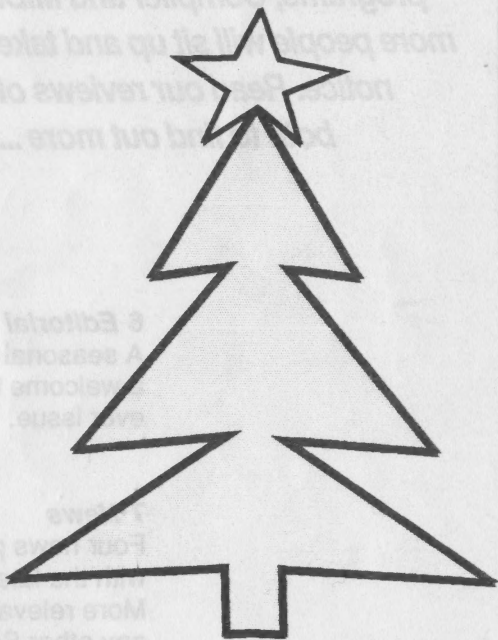
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We can accept articles submitted on paper or in ASCII format on
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pay for all articles published. We are also pleased to accept any
hints and tips you may have, and welcome general letters or
comments about the magazine or other related subjects.

SUBSCRIPTIONS

Sinclair & SAM Computing is available by subscription. The
standard rates are: six issues £9.00 (UK), £10.80 (Rest of
World). Please send your full address and a note stating which
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copy including P&P.

Thank you
for making us ...

Top of the tree in 1991



*Here's hoping that you have
a more prosperous New Year
from everyone at ...*

Sinclair & SAM COMPUTING

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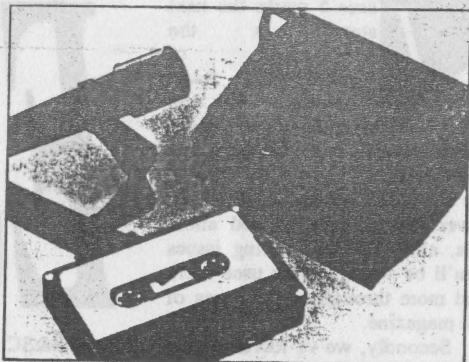
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**Garner
Designs**
Publishing

Issue 5 marks the next stage in the development of Sinclair & SAM Computing. As you will have no doubt noticed, we've implemented a few changes to the magazine. Firstly, we've added colour to the front cover. We're very excited about this, and over the coming issues you'll be seeing colour used more and more throughout the pages of the magazine.

Secondly, we've increased the number of pages - upto 60 pages in this issue. Our aim from now on is 56+ pages for every issue. This means we can pack even more into each issue.

Thirdly, we've changed the format of the magazine to A5. The reduction in size has meant that our printing costs have been reduced, thus allowing us to press onward with colourising the magazine, making bigger issues and keeping the subscription price from rising. While the size now becomes A5, we are continuing to typeset the entire magazine at A4 size, so you are getting the same volume of content as if the magazine was at its old A4 size.

We've never been afraid to make changes to our magazines. We know that our readers want something more than just a good article, they want it to be readable and attractive to look at. We hope that we continue to achieve this, through careful use of design, layout and colour.

Hopefully by the time you read this, all your Christmas turkey will have been consumed and we can all buckle down and get on with 1992 which I hope will be more successful for us all.

Unfortunately, the rush to get this issue to you by the beginning of January meant that the next instalment in the DTP Guide has been held over until the March

Editorial

issue of S&SC.

I've been getting quite a few phone calls asking about our return to the show 'circuit'. Well, we've simply been too busy with the magazine to attend any shows - despite what people think this is a 7 day a week occupation. However, 1992 will be year when we take to the road again, and with the new All Formats Show venues we'll be able to come to a venue near you, rather than us go to London or Birmingham and you come long distances to see us.

Finally, keep your articles rolling in. Our 'stock' of articles is a bit low, mainly due to the Christmas period, but I feel confident that you'll come up with the goods, as they say.

So as we say goodbye to 1991, we wonder what 1992 will bring? Well, we'll just have to wait and see. But, if we can stick to our New Year's resolutions, we can at least hope that we can continue to improve upon our service and order turnaround times which in 1991 were not upto scratch at all, and that by the end of 1992 we will see S&SC once again produced as a monthly magazine. If we can achieve only these, then I'll be a very happy man indeed. If we can achieve some of our other objectives then we shall have exceeded expectations. Thanks for a smashing 1991

Uncertain Christmas as disc stocks dry up

A world shortage of 3.5 inch discs has sent the computer industry reeling as the pre-Christmas sales explosion fast approaches. Virtually all of the main UK disc importers are having severe difficulty locating sizeable stocks. The result could be a major body blow for those companies counting on the Christmas period to offset bad sales caused by the recession.

What stocks of discs which are available are now been sold at vastly inflated prices, and it is said that the major disc manufacturers have manoeuvred the market into this artificial shortage to force disc prices back up after 12 months or so of selling discs at rock bottom prices.

With demand for 3.5" discs from disc duplicators, software companies and magazine publishers at their highest this year, there are many worried people within the industry. Most companies have been forced to source low-grade discs from the far East in a bid to side-step the shortage, although Computer Trade Weekly reports that major companies such as Ocean had purchased stocks of upto a million disks some time ago after foreseeing a possible shortage.

Magazine publishers who place great importance on cover-mounted discs are said to be scrambling to obtain discs in time for their big Christmas issues.

Back from the brink

Both CRASH and ZZAP magazines are back on the nation's book-shelves after the Europress Group bought the magazines from Newsfield, who had of course gone into voluntary receivership on September 16th. Europress, publishers of a range of titles, were eager to get into the 8-bit magazine arena and apparently saw CRASH and ZZAP as easy ways to achieve this.

A new company, called Europress Impact has been formed, based at the former Newsfield's offices. Many ex-Newsfield staff now work for the new company.

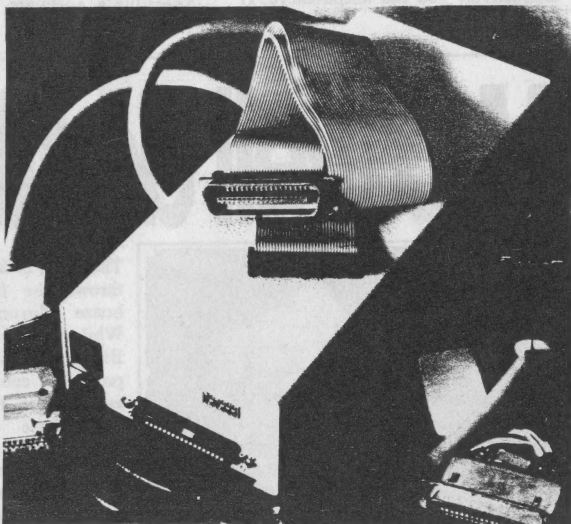
• Due to the saviour of CRASH, ex-Newsfield employee Nick Roberts will not now be staying at SAM Computers. He returns to Europress Impact as deputy editor of CRASH.

Universal Disc Drive

A side-effect of MGT's demise was EEC Ltd's purchasing of the entire stock of the "Lifetime" disc drive - which can be used on the Spectrum, BBC, Archimedes, QL, CPC, ST, Amiga and PC with only a different lead required for each computer.

EEC have since decided to rename the drive to the "Universal" disc drive, simply because labelling a product as "Lifetime" throws up some interesting questions when it comes to warranty.

The drive can be used on the Spectrum +3 or via a Datel Plus D or Disciple disk interface, or on a QL via a standard QL disk interface. Considering the drive's multi-format nature, its price tag of £75.00 must be worth considering. The price includes a lead for the computer of your choice, with leads for other computers available for £9.95. The general postage and packing charge is £9.00.



• EEC Ltd's Universal disc drive

Contact EEC Ltd on 0753 888866 for more details.

New SAMTape launched

LERM Software has just released version 4M of its SAMTape Spectrum emulator. New features include a program to convert Messenger files to SAMTape files.

SAMTape will take Spectrum programs captured with SAMCO's Messenger of upto 64k in length, compress them by upto 90% in size and convert them to SAMTape format.

SAMTape also provides a software fix for a bug in the Messenger which affects the rubber keyed variety of Spectrums.

SAMTape 4M costs £11.99, but SAMTape 4 users can update to the new version for £5 by returning their discs to LERM.

For more information you should contact LERM Software at 11 Beaconsfield Close, Whitley Bay, Tyne & Wear, NE25 9UW or alternatively you can telephone (091) 253 3615.

Lemmings set for Speccy success

After worldwide success and acclaim, those lovable Lemmings are about to make an appearance on the Spectrum. While S&SC generally steers clear of games coverage, Lemmings is the kind of game which can grab hold of even the hardened 'serious' user. Psygnosis are the company behind the game, and is a rare foray into the 8-bit market for a company so well known for 16-bit releases. However, with the success of Lemmings in its 16-bit format in Europe, America and practically every country this side of Timbuktu, and with even talk about a Lemmings arcade game, then the addition of a Spectrum version had to come eventually. Lemmings will cost £12.99 on cassette and will be available by the end of December.

• This month's Gallup market report shows that unfortunately the Spectrum's software market share

continues to fall. Three months ago it stood at 9.8%, two months ago at 7.8%, last month at 7.5% and this month at 5.9%. However, bad news aside, there are some interesting points to remember. Firstly, there are over 1 million Spectrums still in circulation. Secondly, software is still being produced in quantity for the Spectrum, and with big name games like Lemmings being made then the signs are not all bad. And, games magazine Your Sinclair continues to hold a steady readership figure despite the apparent slump, and while the industry expected Crash magazine to sink with the demise of Newsfield, it has been successfully resurrected.

Let's hope that the commercial side of the Spectrum can keep its head above water for a long while to come.

Maxwell death threatens



The death of Robert Maxwell has thrown the future of software house Mirrorsoft into turmoil. While Mirrorsoft boss Peter Bilotta says the company is 'a profitable concern', Mirrorsoft's assets have been frozen along with those of other private companies of Maxwell Communications.

At present Mirrorsoft is operating under administration although it must be stressed that has not had a receiver appointed and the company's past profitability will bode well for a

possible sale of the company. Upto six companies are said to have expressed interest in acquiring the company, with a management buy-out by a consortium headed by Peter Bilotta being an option upon the negotiating table.

With the death of Robert Maxwell plunging the empire into a debt of upto £5 billion sales of all the assets are being prepared hastily. Meanwhile, Maxwell's US software publishing arm, Macmillan Computer Publishing

New Spectrum data filer

SD Software have released a new filing program for the Spectrum. Specfile+ features storage of upto 28K with compression routines to save on memory usage, fast search routines. Contact SD Software at 70 Rainhall Road, Barnoldswick, Lancashire, BB8 6AB.

SAM self-boots thanks to new ROM chip

SC_Autoboot is a new ROM chip for the SAM which replaces the SAM's existing ROM. SC_Autoboot is a version of the most upto version 3 SAM ROM except it adds an auto-booting feature which will automatically boot DOS from disk when the SAM is turned on, thus removing the need to press F9 to manually boot up the disk.

SC_Autoboot comes from Steve's Software and costs £12.50. More details from 7 Narrow Close, Histon, Cambridge, CB4 4XX. Telephone: 0223 235150 between 6pm and 9pm.

New SAM disczine

David Ledbury, publisher of ZAT magazine, is launching a new disczine called SAM Quartet. As its name suggests, the disczine will be published on a quarterly basis costing just £1.50. More details are available from ZAT, PO Box 488, Tweedale, Telford, Shropshire, TF7 4SU.

Fastline ends

Fastline, producers of a number of public domain discs have ceased trading. The SCPDSA have taken over distribution of Fastline's discs. Contact the SCPDSA at 42 Eaton Drive, Kingston Upon Thames, Surrey, KT2 7QT.

Plus 3 Technical Source

Due to popular demand, Garner Designs are republishing articles from +3 Contact magazine, the Spectrum Plus 3 specific pre-cursor to Sinclair & SAM Computing which ran for 18

issues. While the original magazines are not being reprinted, all the articles have been re-edited, added to, and re-typeset and combined to make The Plus 3 Technical Source - a three part publication bound in a custom A4 binder which is available with part 1. Further Plus 3 specific articles are being written which will form further parts of the Technical Source.

We have also responded to a hand-full of our customer's requests for large-print versions of our publications. While it would be too costly to implement a large-print S&SC, we will be producing a large-print Plus 3 Technical Source. What's more we're not charging any extra for it. All Garner Designs' software documentation is also available in large-print versions also.

Amstrad severs more Spectrum support

Amstrad has practically severed all its support with the Spectrum after the announcement that when stocks of 3" discs are exhausted they will not be producing anymore. Despite the Spectrum +3, CPC6128 and PCW

Mirrorsoft

is currently being sold, along with the book publishing arm, Macmillian Publishing.

With insurers refusing to pay out on the 'natural causes' verdict currently attributed to the publishing tycoon's death, and the revelation of a multi-million pound pension fraud, the sale of assets such as Mirrorsoft could still leave debts to be paid.

• Readers with a good memory will remember that Robert Maxwell bid against Alan Sugar's Amstrad when Sir Clive Sinclair put Sinclair and the Spectrum up for sale as he faced financial ruin.

New Year All Formats show dates

Bruce Everiss owner and organiser of the All Formats Fairs has announced a plethora of show dates for 1992, including some at new venues. They are as follows.

January
11 Birmingham
12 Leeds
18 Birmingham
26 Glasgow

February
1 Donington Park
2 Haydock Park Racecourse
8 Washington
23 Birmingham

March
8 Glasgow
14 London
15 Bristol
21 Donington Park

22 Leeds

April
12 Washington
26 Birmingham

May
16 London
17 Bristol

June
7 Glasgow
14 Haydock Park Racecourse

Telephone John Riding on 0225 868100 for more details.

series using 3" discs, Maxell will be the only remaining manufacturer of 3" discs, and with major support from Amstrad now gone, Maxell could follow suit. The exact amount of 3" discs in stock is not clear, although they are not likely to run out for some time.

Newsdisk

SAMCo have decided to stop producing their quarterly newsletter and instead will be producing a monthly disc magazine called Newsdisk which aims to keep the SAM community in touch with all the latest news as well as providing demos and sample screens of forthcoming software, etc. Newsdisk will also be the medium through which the SAM Technical Manual is updated. While Newsdisk will not be available free of charge, as the newsletter currently is, the January and February issues of the disk will cost just £1 so that people can get a taste of just what Newsdisk will be delivering each month. Subsequent issues will cost £2.50 each, or £6 for a 3 issue subscription.

With the supply of information now coming monthly via Newsdisk, the 0898 SAM Hotline service is being closed in the New Year. Orders for the first issue are being taken now and we look forward to seeing the January issue which is due out on January 20th 1992.

Calling all News Hacks

The S&SC news 'dragnet' tries to spread itself over as big an area as possible. While we always find more news stories than other magazines, there are always some which slip through the net. This is where you can help us. The informal nature of most companies means that it often the customers who find out about something first. So if you know something that we don't, please call and tell us. We'll even credit your subscription with 2 extra issues for it.

New Show to take All Format's crown?

The Computer Technology Fair is a new show which is set to give the All Formats a run for its money. With an All Formats show now taking place somewhere virtually every week-end until July, the Computer Technology Fair is in direct competition.

A number of dates have already been announced. They are as follows: Birmingham on 12th January (clashes with All Formats in Leeds), Brighton on 25th January, London on 1st February (clashes with All Formats at Donington Park), Kent on 8th February (clashes with All Formats in Glasgow), Cardiff on 7th March, and Manchester on a yet undisclosed date.

No precise on the venues were available at the time of press. For more information, telephone CTF on 0273 607633 or write to 50 Grand Parade, Brighton, BN2 2QA.

New All Formats venues

The full list of venues for the All Formats Shows is as follows:

West Midlands - The national Motorcycle Museum, Birmingham. J6 M42.
North - University Sports Centre, Calverley Street, Leeds.
Scotland - City Hall, Candleriggs, Glasgow.
North East - Northumbria Centre, Washington. A194(M).
London - Horticultural Hall, Westminster.
West - Brunel Centre, Temple Meads, Bristol.
East Midlands - Donington Park. J23A M1.

North West - Haydock Park. J23 M6.

Full further details telephone John Riding on 0225 868100 for more details.

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Z80 TOOLKIT - "BRILLIANT PACKAGE" - YS 7/88. M/CODE PACKAGE SIMILAR TO SAM TOOLKIT. A REAL MUST! £8.99.

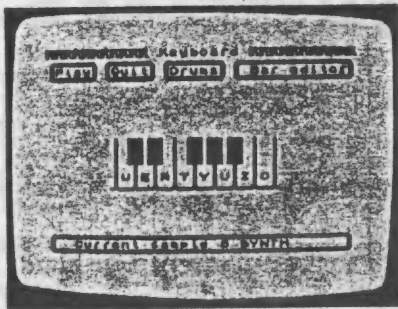
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The RAM Music Machine has become one of the most widely used musical aids used on a Spectrum. Unfortunately, due to hardware incompatibilities and tape-based software, +3 and +2A users haven't been able to take full advantage of the device.

However, in this article Garry Rowland, publisher of Music Writer, reveals how to get things working.

RAM jamming on the +3

By Garry Rowland

Technical DOS Patch

A program to allow disc usage with the RAM Music Machine.

Garry Rowland says, "The patch is nothing fancy and, apart from the Catalogue drive option, the Music Machine menu doesn't look or handle any differently than before. But it does work. The files are placed in your public domain library. They are: Patch.Doc, Patch.Asm and Patch.Bas. The .Asm file is in DEVPC format (and is the same as the listing here). The .Bas file copies the code in a REM into position, loads the original RAM MM code from tape. It makes a few modifications to the code and saves the new version to disc."

The RAM Music Machine requires +9v from the Spectrum's expansion port, which unfortunately the +3 or +2A doesn't provide due to a bit of Amstrad's "wisdom". There are a couple of ways of resolving this problem. Firstly, the interface can be modified so that it can use the +3's +12v line. This will void the warranty though. Alternatively, you can use the Fixit adaptor from BG Services which converts the +3 or +2A's expansion port into one which is compatible with all the old Spectrum add-ons, including the RAM Music Machine.

The RAM Music Machine DOS Patch was written for the current version of the Music Machine supplied by Datel Electronics. There may well be other versions which will not work with this patch. Different versions are unlikely to require anything more than a few addresses to be

changed. The assembler source file is included to facilitate any amendments required for different patch versions.

Using the DOS Patch

The LOAD/SAVE menu can be used to save and load files to tape as before, by using the standard +3 syntax: "t:" to change drive to tape, "t:name" to perform tape operation. Once the load drive has been set to "T", null "" names can be used. Note that files saved as "t:name" will not load as "name", but will load as "" or "t:name".

Disc operations use the current default drive. Drive names can be included to save or load files using a specific drive. Drives A, B and M are available.

The CAT option catalogues the last drive used (A, B or M). User area numbers are not supported.

; RAM Music Machine DOS PATCH
; Public Domain software by G.Rowland

ORG 26062-13

LOADDRV: EQU #5B79
SAVEDRV: EQU #5B7A
BANK M: EQU #5B5C
EXIT: EQU #9998 ; Exit thru #9998
resets stack and returns to command loop

; copy INIT routine and patch into position
REMCOPY: ADD HL,BC ; get address of INIT
LD DE,#65EB ; destination
LD BC,938 ; length of

INIT+PATCH

LDIR
RET ; Return to BASIC

; INIT copy of RRM Code
INIT: LD HL,SSLD
LD (#6AD2),HL ; Replaces old table

entry

LD A,#C3 ; Call to save routine
LD (#9A1A),A ; redirected to new
LD HL,DOSSV ; DOS routine
LD (#9A1B),HL

; Modify a calling routine so that it doesn't enter beyond redirection

LD A,#1A
LD (#9A0C),A

; Change start of SAVE TUNE routine so that it doesn't get filename twice
LD HL,#99E8
LD (#6ADC),HL

; Replaces SAVE EVERYTHING with CATALOGUE DRIVE

INSTRUCTIONS

The get everything up and running follow these steps:

1. Type in the listing and assemble it
2. Exit from your assembler into Basic
3. Load the DOS Patch code
4. Load the RAM Music Machine code from the FMM cassette, with LOAD = CODE 27000
5. Type RANDOMIZE USR 26062
6. With the FMM code now altered, type SAVE "A:3MM.EXE" CODE 26124,39474 to save the new code file onto disc
7. Reset your computer and type in the following program:

```
10 CLEAR 26123
20 LOAD "3MM.EXE"
CODE
30 RANDOMIZE USR
27000
```

8. Type SAVE "DISK" LINE 10 to save the program (make sure it is on the same disc as the 3MM.EXE file)
9. The process is now complete, with the disc automatically running from the +3's main menu.

```
LD HL,CATLG
LD (#6AE1),HL
LD HL, MENU4
LD DE,#70C9
LD BC,16
LDIR
RET

MENU4:  DEFN "Catalogue drive"
        DEFB 0
; +3DOS Patch Starts Here
; Enter with drive to check in (DE)
CHKDRV: LD A,(#A615)
        CP " "; Check for change of drive
        RET NZ
        LD A,(HL) ; Get new drive
        CP "A"
        JR Z,ACPTDR
        CP "B"
        JR Z,ACPTDR
        CP "T"
        JR Z,ACPTDR
        CP "I"
        RET NZ ; Ignore invalid drive
        LD (DE),A ; Set tape drive
        LD A,C
        CP 2
        RET NZ ; Return if "t.name"
        JP EXIT ; Exit if just "t"

ACPTDR: PUSH HL
        PUSH BC
        CALL BASDOS
        CALL #012D
        CALL BASDOS
        POP BC
        POP HL
        INC HL
        INC HL ; Skip filename
        DEC C
        DEC C
        JP Z,EXIT ; Exit to command if only
drive change
; copy name over drive name
        INC C ; Include end marker
        LD DE,#A614
        LD B,0
        LDIR
        RET
; Get filename upto 12 char long
; Exit with number char input in C
FNAME:  LD HL,#A6AD ; Init TAPE HEADER
        LD DE,#A6AE
        LD BC,9 ; Max length of tape name
        LD (HL),#20
        LDIR
        LD IX,#7080 ; Point to menu in use
        CALL #834D ; Clear menu panel
        LD HL,#9A60 ; Print "Enter filename"
        CALL #81E7
        LD B,12 ; Max length of DOS name
        CALL #83E4 ; Input filename
        LD A,B
        OR C
        RET Z ; return if no name
; Copy name to tape header
        LD DE,#A6AD
        LD HL,#A614
        LD A,B
        CP 11
        JR C,CPYNME
        LD B,10 ; Max 10 char for tape
header
CPYNME: LD A,(HL)
        LD (DE),A
        INC HL
        INC DE
        DJNZ CPYNME
        LD B,C ; Restore name length
; Now force caps on DOS copy of name
        LD HL,#A614
        FCAP: LD A,(HL)
```

```
CALL #69E8
LD (HL),A
INC HL
DJNZ FCAP
LD (HL),#FF ; Mark end of DOS copy
RET
; Flip Dos ROM & Pg 7/BASIC ROM & Pg 0
BASDOS: DI
        PUSH AF
        PUSH BC
        LD BC,#7FFD
        LD A,(BANK M)
        XOR #17
        LD (BANK M),A
        OUT (C),A
        POP BC
        POP AF
        EI
        RET
; DOS Save routine
DOSSV:  CALL FNAME
        LD A,B
        OR G
        JP Z,EXIT
        LD DE,SAVDRV
        CALL CHKDRV
        LD B,C
        LD A,(SAVDRV)
        CP "T"
        JP Z,#9ACD ; to tape save routine
        CALL BASDOS
        LD A,(SAVDRV)
        CALL #012D
        JP NC,DOSERR
        LD HL,#A614
        LD BC,#0102 ; File number and
access mode
        LD DE,#0103 ; Create and open
action
        CALL #0106 ; Open file named in
(HL)
        JP NC,DOSERR
        LD B,1 ; File number
        CALL #010F ; Create DOS ref head
        LD A,(#ACAC) ; Get file type
        PUSH IX ; Get ref head
        POP DE ; into DE
        LD (DE),A
        INC DE
        LD HL,#A6B7 ; Copy tape head to
DOS head
        LD BC,6
        LDIR
        LD BC,#0100 ; File & page number
        LD DE,(#A6B7) ; Get length
        LD HL,(#A6B9) ; Address of bytes to
save
        CALL #0115 ; Write bytes
        JP NC,DOSERR
        LD B,1
        CALL #0109 ; Close file
        JP NC,DOSERR
        CALL BASDOS
        RET
; DOS Load Routine
DOSLD:  CALL BASDOS
        LD A,(LODDRV)
        CALL #012D ; Set drive
        JR NC,DOSERR
        LD HL,#A614
        LD BC,#0101 ; File number and
access mode
        LD DE,#0001 ; Create & open action
        CALL #0106 ; Open file named in
(HL)
        JP NC,DOSERR
        LD B,1 ; File number
        CALL #010f ; create DOS ref head
        PUSH IX
        POP HL
        LD A,(HL) ; Get file type
        LD (#A6AC),A
```

If you want to get hold of a RAM Music Machine then contact *Datel Electronics* on 0782 744707.

The *Fixit* is available from *BG Services*. Telephone 081 397 0763 for more details.

```

INC HL
LD DE,#A6B7)
LD BC,6 ; make copy of header
LDIR
CALL BASDOS
SCF : File header read
RET
; Continue with load if room for file
LDGCONT: CALL BASDOS
LD DE,(#A6B7) ; Get length
LD HL,(#A6B9) ; Get address to load

to
LD B,1 ; File number
LD C,0 ; Page number
CALL #0112 ; Read file
JR NC,DOSERR
LD B,1
CALL #0109 ; Close file
JR NC,DOSERR
CALL BASDOS
SCF : Flag successful load
RET
ERMSG : DEFM "+3 DOS error number "
ERNUM : DEFB #30,#30,0
; Errors must exit through here
; A=0 close file and return
; A=1-26 Close file, report DOS error and return
; A>252 Close file and exit to RMM report

RMMERR: CALL BASDOS ; make sure DOS
paged in
DOSERR: PUSH AF
LD B,1
CALL #0109 ; Try closing file
LD B,1
CALL NC,#010C ; Abort if you can't

close
CALL BASDOS
POP AF
ORA
RET Z
LD HL,#9D05 ; Wrong file type
CP #FF
JP Z,#9CAC
LD HL,#9CF0 ; Not enough memory
CP #FE
JP Z,#9CAC
LD HL,#9D18 ; No free samples!
CP #FD
JP Z,#9CAC
CALL H2DEC
LD (ERNUM),DE
LD IX,#7080
CALL #834D ; Clear panel/window
LD HL,ERMSG
CALL #81E7 ; Print DOS error

message
LD HL,#9D2B ; Hit any key!
CALL #81E7
LD B,2
CALL #8499 ; Wait for key press
ORA
RET
; LOAD SAMPLE IF FILE TYPE=4
; LOAD SONG IF FILE TYPE=5
SSLD: CALL FNAME
LD DE,LODDRV
LD A,B
OR C
JR NZ,SSLD2
LD A,(DE)
CP "T"
; Load from tape if "" null name
JP Z,#9B8B
; No action when "" used on drive A/B/ or M
JP EXIT
SSLD2: CALL CHKDRV
LD B,C
LD A,(LODDRV)
CP "T"
JP Z,#9B8B ; Load from tape

CALL DOSLD ; Get DOS header
JP NC,EXIT ; Branch if load error
LD A,(#A6AC)
CP 4 ; Sample file type
JP NZ,LDSNG

; Load Sample
CALL CHKTOP ; Look for free
sample area to load into
LD B,9 ; Number of samples to test
LD C,0 ; sample number
FNDFRE: PUSH BC
LD A,C
LD HL,#A6BD
CALL #872A ; get sample C
CALL #99D5 ; get length of sample
LD DE,6
ORA
SBC HL,DE
POP BC
JR Z,FRESMP ; branch if free sample

found
INC C ; point to next sample
DJNZ FNDFRE
LD A,#FD ; No free samples
JP RAMERR
FRESMP: LD A,C
LD HL,#A6BD
CALL #872A ; get address of free
sample
LD (#A6B9),HL
PUSH HL
LD HL,(#A6B7) ; get length of file to
load
LD DE,6
ORA
SBC HL,DE
LD B,H
LD C,L
POP HL
INC HL
CALL MKROOM
CALL LDGCONT
JP C,EXIT
; Make sure bad load leaves null sample
LD HL,(#A6B7)
LD BC,6
ORA
SBC HL,BC
LD B,H
LD C,L
LD HL,(#A6B9)
INC HL
CALL #8DFC
LD DE,(#A6B9)
LD HL,#9D83
LD BC,6
LDIR
JP EXIT
; Exit if room for file
CHKTOP: CALL #8E4A
LD DE,(#A6CF)
INC DE
LD HL,0
ORA
SBC HL,DE
LD DE,(#A6B7) ; length of block
ORA
SBC HL,DE
LD A,#FE ; Not enough memory
JP C,RMMERR
RET
; Make room for file
MKROOM: LD A,B
ORA
RET Z
PUSH HL
LD HL,(#A6CF) ; get top
ORA
ADC HL,BC ; Amount of room rec.
POP HL
LD A,#FE

```

```

JP C,MMERR
JP #8DE0 ; Make room
; LOAD SONG
LDSNG: CP 5
LD A,#FF ; Wrong file type
JP NZ,MMERR
CALL CHKTOP
LD DE,#AACF
LD HL,(#A6D1)
OR A
SBC HL,DE
LD B,H
LD C,L
LD H,D
LD L,E
CALL #8DFC
LD HL,(#A6B7) ; length of song to
load
LD BC,#01FE
OR A
SBC HL,BC
LD B,H
LD C,L ; length of song-510 bytes
LD HL,#AACF
CALL MKROOM
LD HL,0
LD BC,#A6D3)
OR A
SBC HL,BC
LD B,H
LD C,L
LD HL,1
CALL #8E68
CALL LDCONT ; Load song
; Tidy Up?
LD BC,#A6D3
LD HL,1
CALL #8E68
LD HL,#AACF
LD(#A6CD),HL
JP EXIT
; catalogue
current default device
CALL #81C6 ; Clear screen
LD BC,9
CALL #82BA ; Set print colour
CALL BASDOS
LD HL,#C00 ; Clear directory area
LD DE,#C001 ; on page 7
LD BC,1024
LD (HL),0
LDIR
LD B,64
LD C,1
LD DE,#C000
LD HL,CATNME
CALL #011E ; DOS catalogue
JR NC,CATX
LD A,B ; get directory length
CP 2
JR C,CATX ; branch if disc empty
DEC A
LD (CATN),A
LD HL,#C00D
PUSH HL
LD C,8
CALL PNAME
DEC HL
LD A," " ; Field separator
LD C,4
CALL PTYPE
LD A,(H) ; Get MSB of file length
CALL H2DEC
LD (HL),E ; Place ASCII where it
INC HL ; can be picked up by
LD (HL),D ; PTYPE call
DEC HL
DEC HL
LD A," " ; one space between quote
marks
LD C,3

```

```

CALL PTYPE
PUSH HL
CALL #82CD
LD C,7
INC B ; Move cursor down
LD A,B
CP 21
JR C,CNME
CALL #8499 ; Wait for key
CALL #81C6 ; then start new screen
LD BC,12
CALL #82BA
POP HL
LD A,(CATN)
DEC A
LD (CATN),A
JR NZ,NXNME
CALL #8499
CATX: CALL BASDOS
; Restore LOAD/SAVE screen
LD IX,#7080
LD HL,#6AC4
PUSH HL
JP #6A46
; Print filename
PNAME: LD A,(HL) ; fetch character
; Enter here to print type field & K size
PTYPE: PUSH HL
CALL BASDOS ; Make sure BASIC
paged in
CALL #82E5
CALL BASDOS ; Get cat page 7 back
POP HL
INC HL
DEC C
JR NZ,PNAME
RET
; Convert hex to two ASCII decimal numbers (0-99)
H2DEC: LD DE,#0030
CNVN: CP 10
JR C,SETASC
INC E
SUB 10
JR CNVN
SETASC: ADD A,#30
LD D,A
RET
CATN: DEFB 0
CATNME: DEFM " "
DEFB #FF

```

; RAM Music Machine goes here

THE RAM MUSIC MACHINE

The RAM Music Machine is a technically impressive piece of hardware. Designed by the Flare team, most of which were ex-Sinclair Research employees, the device has gained a wide popularity. Comprising sampling and MIDI facilities, it is both a cheap and comprehensive package. While the hardware is excellent (it can sample at over 19,000 samples per second), the supplied software is considered rather a let down (although this article goes some way to redress this).

The MIDI facility includes MIDI In, Out and Thru, all via standard DIN sockets. Sound output is stereo and you can easily link the device to either a hi-fi or headphones. Input is via a supplied microphone with a slider giving control of input.

While the RAM Music Machine was unavailable for some time, Datel Electronics are now selling stocks at an extremely reasonable £49.99.

The Kobrahsoft Diary

I think somebody was giving me a gentle nudge when I was sent Kobrahsoft's Diary to review. Being disorganised and sending copy after deadlines for inclusion in S&SC is something I get moaned at for. I'm told that being organised is a 'good thing'. I have my doubts.

Anyway, on with the show as they say. The program is basically a calendar and filing utility for the Spectrum +3 supplied on a single 3" disk. Upon loading the program you are presented with the title page giving you three options: DATES, NAMES and SETUP. Pressing either D, N or S selects the appropriate option.

Taking the DATES option first, this is the diary section of the program. You are then given the option of loading a new diary file from disk, loading the default file or starting a new file from scratch. Whichever you choose, you will be presented with the main diary screen containing a calendar display at the top of the screen, the daily notes window and a biorhythms display on the bottom of the page (more about biorhythms later).

The calendar display is accompanied with the date being displayed. Should there be any

notes available for the day highlighted on the calendar, these are displayed in the notes display. Using the cursor keys, one can select any day in the month displayed in the calendar and by pressing SYMBOL SHIFT and the left or right cursor keys you can go back or forward a month. Using SYMBOL SHIFT and the up or down cursor keys enables you to jump back or forward by a whole year. Pressing the D key allows the direct entry of a date, e.g. 12/08/1991. The program is able to operate within the dates 01/01/1910 to 31/05/2089 - quite long enough for us all.

Notes can be added to any day very easily. Pressing the N key takes you into the editor mode which allows notes for a range of days to be edited, created, deleted or saved to disk. Editing a day's notes enables you to enter four lines of text. This doesn't look at first as if it will be enough space, but as most of us write diary entries in note form I guess that you won't find it too limiting.

However, one major gripe that I have is that the text entry in this mode is too slow. While to a slow typist this problem will be transparent, to a faster typist you need to keep referring to the screen to make sure that you have not typed too fast for the program

and characters have been missed out.

The Address Book part of the program, denoted by NAMES on the title screen allows you to keep all your personal or business contacts in order. Like with the diary part of the program you are initially given the option to load a saved file, load the default file or to create a new file. The main address book screen consists of a display of four entries in the address book. One of these four entries will be highlighted. Using the up and down cursor keys you can scroll through your entire address book to find a specific entry, or press the letters A-Z or numbers 0-9 to automatically jump to the first entry in your address book which begins with that letter or number. Since the program automatically sorts your entries into alphanumeric order, I have found this last feature to be of immense usefulness in locating data quickly and easily.

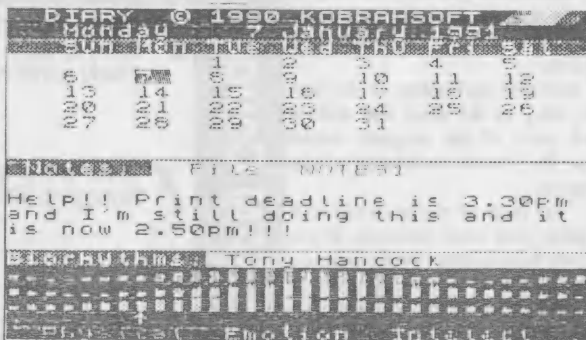
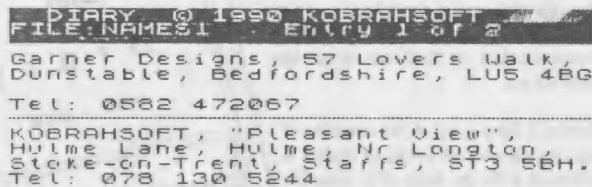
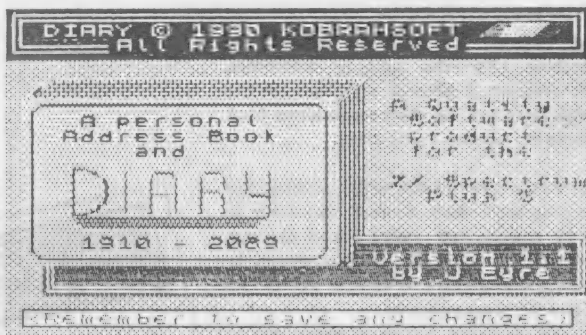
Editing an entry is achieved by highlighting the required entry and pressing the ENTER key which brings up another menu at the foot of the screen which contains options to save your data, edit an entry, insert new entries, delete existing entries and to find an entry.

This last option is again useful, as it will find information 'on the fly' as you type in your search criteria. This facilitates easy location of data.

The biorhythms in the diary section of the program are a real oddity. Why the author decided to put them into the program is a question we could probably ponder upon for a good deal of time. But seeing as they are there, we must take a look at them. Biorhythms are supposed to reflect our physical, emotional and intellectual state on any given day. We are told in the instructions booklet which accompanies the program that we can use biorhythms to our 'considerable advantage', i.e. on a bad day we can be more cautious of bad events 'waiting' to occur.

Then there are things called 'critical days' which basically means that the day is going to be one long personal hell. Heaven forbid, that a 'double critical day' occurs!

Frankly, I find all this to be a bit sceptical to say the least. But as they say, 'whatever lights your fire'.



The program makes good use of the Spectrum +3's extra memory capabilities. The program is able to keep various size combinations of the diary and address book data in the memory at one time.

The instructions booklet which accompanies the program is fairly detailed, and while on screen options lists remind you of the keys you need to press, the booklet should be initially read through so you can get an idea of how the program works.

An annoying feature of some disk based programs (and Kobrahsoft Diary is no exception) is that when a DOS error occurs they simply give you the DOS error number. For example, 'DOS error 2' - what? I wish programs would give you an account of what has happened in plain English so we don't have to either refer to the +3 manual or the program's documentation to find out what has gone wrong.

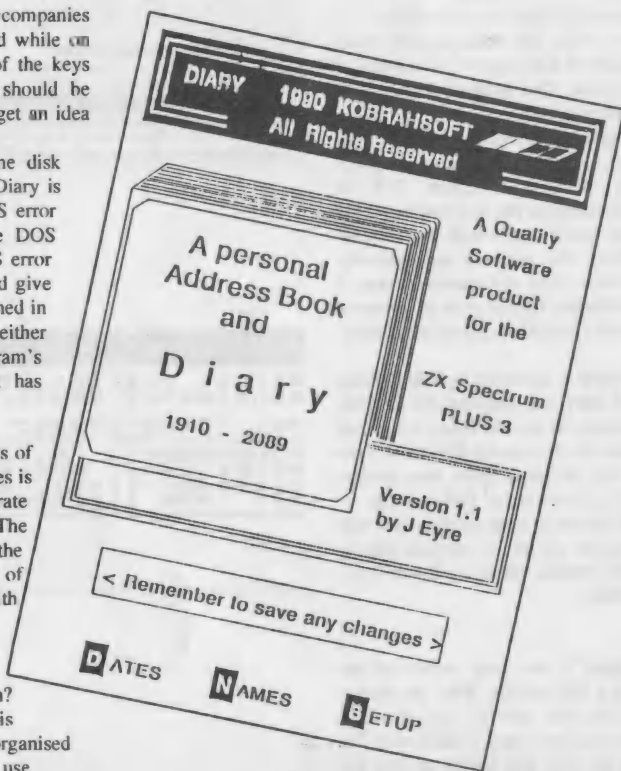
Getting a hard copy of the contents of one of your address books or diaries is achieved with the help of a separate BASIC program on the disk. The program is documented in the instructions booklet with detailed of how to alter it for compatibility with your particular printer.

So what do I think of the program?

Well, its nicely presented and is certainly very useful - even for organised people. The program is easy to use and the screen displays give you all the information you need to know to get through the program without too much reference to the instructions booklet.

However, such things as the slow text entry in the diary and address book parts of the program detract from the overall usefulness of the program.

For value for money, at £12.95 it is fairly good value. However, if you already have another similar program you may like to take a closer look at the program before you part with your hard earned.



SAM Coupé

VERDICT

- ✓ Nice range of features
- ✓ Easy to use
- ✓ Fairly good value for money
- ✗ Slow text entry will annoy medium-to-fast typists
- ✗ Annoying 'DOS Error' reports

79%

Down in the Dumps



Malcolm Perry investigates a new utility for SAM Coupé users which enables screens to be printed out in full colour to a Star printer.

A set of programs are available from PBT Electronics which allow you to print mode 4 screens to colour printers such as the LC10 and LC200 (or compatibles).

The only instructions which are supplied with the disc is the obligatory "F9 TO LOAD" on the disc itself, which produces a menu comprising the following:- Version 1 and 2 colour dumps, 2 routines to modify FLASH to print in colour, one for SAMDOS and one for MasterDOS. There is also an information file on the FLASH modifications.

The first thing I did was to get a print out of the Colour Chart. This shows a selection of the 64 "different" colours. Each colour is given 2 reference numbers. For those not conversant with colours printers, the ribbons has yellow, red, blue and black tracks. Additional colours are obtained by overprinting. For example, green is achieved by printing blue on yellow, orange by printing red on yellow and mauve by red on blue. The makes the 7 basic colours for the printer. However, the program generates further colours by further overprinting. For example, brown is achieved by printing black on red, another shade of brown is achieved with printing orange (which in itself is red on yellow) on black, green on green gives a dark green, yellow on green gives a light green and green on black gives a very dark green. And there is of course, the normal shade of green, which I cannot decide if blue on green should be classed as a shade of green or blue! ▶

I used the phrase '64 "different" colour' above because there is a lot of duplication in the colour chart. The colour value 7 is the paper colour or print nothing, and orange is show separately in the chart as orange on 7. 7 on orange, yellow on red and red on yellow. Taking such duplications into account the number of variations is nearer 30. It is open to discussion if for example red on blue gives a different shade of mauve to blue on red. I do recommend that as much as possible, yellow is not printed on top of another colour because it can "pick up" that other colour and become dirty very quickly. The original MGT colour dump had this fault of printing yellow second but when I altered the routine to print yellow first the ribbon life was greatly extended.

The COLSWAP routine provides the facilities to alter the colours of a screen prior to printing it out. Any colour can be changed to any other. This are global changes throughout the screen, so use of the RAMLOAD and RAMSAVE options is advised incase you change your mind about altering colours. These RAM disc features do not need MasterDOS to be present incidentally.

The main disadvantage is that only the default 16 colours are used and any screen which is loaded is set to these colours. Screens that were composed using a wider range of colours, or even with the line interrupt to change the palette can look somewhat psychedelic and may need a lot of work to give a decent printout.

There is not an exit option in the menu, so the routine has to be exited by ESC or by the BREAK button, followed by F9 to reboot the

<u>HEIGHT</u>	<u>MODE</u>	<u>WIDTH</u>	<u>APPROX SIZE cm.</u>	
d	0	1	20w	14h
s	1	1	11	7
s	3	2	11	7
s	3	3	16	14
d	3	3	16	14
s	6	1	14	7
d	6	1	14	14

disc.

The Version 1 Dump is introduced with two screens full of information followed by a list of screen to printer colours - which seems to contain some wrong information. After further information screens you are prompted to enter the height, dot density, width, number of head passes, margin and finally the filename of the screen you want to print out. Not that if a load fails, the program stops with an error and a restart takes you through all the preliminaries again. Having loaded the screen it is then printed out automatically.

This printout, as with COLSWAP, only uses the default colours of the SAM and are not changeable. On completion you are given the option to print another copy.

Version 2 Dump has the main advantage of that in COLSWAP a screen keeps its original colours intact and the PEN colour chart is set to these colours. This means that screens are kept intact irrespective of which of the 128 colours were used. It is also of great advantage in that the colours in the dump can be set to give close approximate in the printed copy as Version 2 allows the changing of screen to printer colour representation.

Having obtained the colour chart when a screen has been loaded into COLSWAP (V2) the pen colours can be compared with the chart and the most appropriate match obtained. DUMP V2's introduction and set up process is much the same as version 1's. I expect that at the colour table values can now be changed. On completing the set up process, the screen file is loaded and then printed.

This routine is somewhat slower than Version 1 with 30+ minutes the normal print out time per screen. The printer is not at all fast and has to make more passes and colour changes per line. A random count gave 25 passes and 17 colour changes just to print one line. However, remember that there are over 49000 pixels to be processed and 1 pixel may need as many as 4 colours to be overprinted.

To put things into perspective, the program takes about 9 seconds to look at a blank line and decide that there is nothing to print and around 3 minutes for a complete blank screen to be covered without sending any data to the printer.

The modifications to FLASH are best

attempted on a copy of the FLASH program just in case something goes wrong. The modification is fully automatic and well screen prompted. In FLASH the QUIT option in the FILE menu is changed to MENU, and when the modification is in place the MENU option brings up an additional on-screen menu which allows you to do a version 1 or version 2 dump, or options to invert, mirror or shrink the screen. The shrink option lets you reduce the screen and has 6 degrees of shrink. Screen definition is retained quite well.

If MasterDOS is used then additional facilities are provided to format and close ramdrives and copy files.

Now for some observations and my thoughts on the routines. As far as the Flash modification is concerned the process is well prompted and I have not found any problems with it so far.

The lack of documentation accompanying the program will leave less competent users in a frustrating position and trial and error is the only way certain things can be found out about the program. This is especially the case in the COLSWAP and DUMP programs as the actual setting up of the colour dump does leave the user to fend for themselves. For example, the user is expected to work out which combinations of graphics mode work with which height and width settings and which do not. As there are some 40 possible variations of print size and density, 30 minutes per test print is a long, and a lot of paper and ribbon wear and tear. However, probably only a sixth of these are really meant to go together. The others can be used for special effects such as enlarging part of the screen. For example, 60 dots per inch with width 3 would stretch the left-hand third of the screen to full page width. The greater the DPI (dots per inch) the denser the print and so better the quality. However, this also increase the time to print the screen out.

The table on the previous page shows some example combinations which I have found to work okay.

I find that the lack of exit option and not being able to swap between the routines other than by breaking the program and reloading a bit of a pest. I would

have preferred to be able to go from COLSWAP to DUMP in each version (and back) at least. Especially as it is almost a necessity to use COLSWAP before DUMP in version 2 to get colour references.

In version 2 after entering the colour data to suit a particular screen there is no provision to save these values for future use. It is lost and has to be re-entered on each load. There can be as many as 32 entries to be made. For those with a programming knowledge who may like to add such a routine, the colour table is held at 16726 to 16757.

During the setting up of a screen dump, I would have preferred that after a loading error you would be able to immediately re-enter a new file name without having to start from scratch each time. A simple spelling error is a common problem so a chance to call up the DIR is an advantage.

The bottom line is that I consider the set of programs to be worth the asking price. However, it should not be left upto the user to try to alter the program to get the best performance from it.

The program is available from:

PBT ELECTRONICS Ltd.
Unit 17,
Port Talbot Workshops,
Addison Road,
Port Talbot,
West Glamorgan,
SA12 6HZ.
Telephone: 0639 885008

Price: £8.99 + £1 P&P.

VERDICT

SAM Coupé

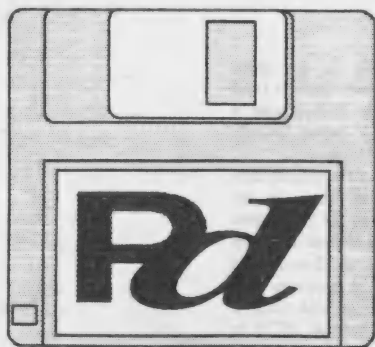


Does the job it sets out to
Value for money



No printed documentation provided
Program not very user friendly - needs a re-write
Quite slow

70%



Public Domain

Welcome to our new look Public Domain library for the Spectrum. As you will see, every program on each of the ten Spectrum +3 discs available is described below so that you can quickly find the program you need.

We've also had some additions to the library so we've added a tenth disc to the library. However, we also had a mishap with a couple of our master discs becoming corrupted, so the contents of disk 1 have had to be cut down while new copies of the corrupted programs are located.

Lack of interest in our PD

cassettes has also meant that it was no longer cost effective to distribute it on such a small scale. However, instead of the previous range of 9 cassettes, we are compiling all the cassette PD onto just a few C90 cassettes so that when people do order cassette PD there is less hassle for us. Once, these cassettes are finished and sent off to the duplicators, you'll be the first to know, through the pages of S&SC of course!

Finally, if you have any questions about a particular piece of public

domain software, i.e. if you think it will suit your needs or just help in using it, then please telephone us on 0582 472067 (afternoons only please) and we'll give you all the help we can.

We've also streamlined our system too, and we can supply PD either on our own 3" disks, or if you prefer, on a 3" disk which you supply. We also now guarantee to mail your order to you within 7 days of receiving it. If we don't we'll refund your money in full. We can't say fairer than that can we?



Headload - Alters a file's header (e.g. BASIC to m/c). Great for hackers! Author: Brian Gaff.
Headcopy - Copies tape headers to

DISK 1

disk. Author: Brian Gaff.

CATall - CATs all 16 user areas of a disk, including hidden files. Print option. Author: Brian Gaff.

Parameters - Sets the disk drive parameters to make it faster and quieter. Author: Brian Gaff.

April Menu - Displays a fake +3 main menu, which could be altered as required. Author: Gary Stimson.

CAT - Stores a disk catalogue in memory for use in your own programs. Author: Daniel Garner.

K Free - When called, returns with the number of K free on a disk. Author: Daniel Garner.

Axel F - Excellent 128K version of the famous tune. Author: Daniel Garner.



SecureIt - Conceals any numbers in a BASIC program so that they appear differently to a hacker. Author: Daniel Gamer.

DISK 2

AutoSecureIt - Fast automated version of SecureIt. Author: Gary Stimson and Daniel Garner.

Logo - Simple program to create interesting screens (not a LOGO language). Author: Owen Brown.

Vector 3D - Allows you to experiment with vector graphics. Author: Owen Brown.

Other Worlds - Allows screens to be mapped onto a spherical object. Author: Geoff Wearmouth.

Varisave - Enables more than one array to be saved at the same time. Author: Chevron Software.

Multi-Flash - Psychedelic attribute scrolling! Author: Paul Monaghan.

Trans 48 - Use in your own programs to enter 48K mode from +3 BASIC without the usual error

message. Author: Paul Monaghan.
Super Input - Machine code keyboard input routine for use in your own programs. Author: Paul Monaghan.

SpecTec Demo - A great Amiga style demo PLUS the classic snake game. Author: Dave Gosnell.
Bout - A machine code routine to completely reset your +3. Author: Unknown.

Sound to Light - Two different sound to light converters. Author: Daniel Garner.

Kingfisher - Colourful Screen\$ of the bird of the river banks. Author: Richard Shelford.

Countryside Screens - Excellent Screen\$ of the Cornwall countryside. Author: Richard Shelford.

Autoloader - Useful utility that automatically adds a loading menu to your disks. Author: Marc Reed.

Easylist - Produces neat, structured and easy to read BASIC listings. Author: Daniel Garner.

DISK 3

Calendar - Produces a neat calendar for any month, with print option. *Author: Daniel Garner.*

+3 Disk Checker - Checks disk space and that files are not corrupted. *Author: Daniel Garner.*

Fonts - 3 slick new character sets for your Spectrum. *Author: Daniel Garner and P.Gideon.*

Recover - An essential program that will restore erased files. *Author: Joe Worall.*

Big Text - Allows text to be displayed in a variety of different sizes. *Author: P.Gideon.*

Screen Fade - A very slick routine to fade the screen. *Author: Daniel Garner.*

Hex-Dec Converter - Converts hexadecimal numbers to decimal numbers, and vice versa. *Author: Daniel Garner.*

64 Column Display - Squeezes 64 characters into one line of the screen. *Author: Daniel Garner.*

REM Address Finder - For use with the program above. Finds address of a REM statement. *Author: Daniel Garner.*

Chordata - Something to do with music, though I'm not sure what. *Author: Dave Rogers.*

Drawmaster - A great pool-predictor PLUS a random story generator. *Author: Grant Punched.*

Axel-F The Sequel - Another Axel F tune. *Author: M.Kirk and L.Davis.*

Fonts Galore - 24 excellent new Spectrum fonts. *Author: D.Guard.*

Ramset - Alters the RAM disk cache and position. *Author: Brian Gaff.*

Crunch - Superb program. Crunches many files into one. *Author: Chris Pile.*

Double Height Text - Prints double height characters. *Author: Daniel Garner.*

INSTR\$ - Gives your +3 a much needed INSTR\$ function ...

LEFT\$/RIGHT\$/MID\$ - ... and LEFT\$, RIGHT\$ and MID\$. *Author: Daniel Garner.*

+3 to 128 BASIC Converter - Converts +3/+2A BASIC programs so that they work on a Spectrum 128K/+2. *Author: Daniel Garner.*

DISK 4

Oxygene - Excellent sampled music demo of Oxygene. *Author: D.Guard.*

Guardians - Great 3D arcade adventure game. *Author: Wizard.*

Morse Code Tutor - Good program to help you learn Morse Code. *Author: P.Gideon*

Mouse Pointer Routine - Allows a pointer to be moved using A Kempston/Genius mouse. *Author: Daniel Garner.*

Mega Blast - A great sound to light converter. *Author: Daniel Garner.*

Compare - Compares two files and erases if required. *Author: Unknown.*

Hold It - Great screen store utility. *Author: Chevron Software.*

Code Shifter - Relocates "unrelocatable" code. *Author: Chevron Software.*

48 Return - Goes from 48 to +3 BASIC while retaining use of printer port. *Author: Daniel Garner.*

Hangman - A 2 player Hangman game with great graphics. *Author: P.Naughton.*

Procross - Excellent crossword editor complete with demo crossword. *Author: Chevron Software.*

Supernat - Formats disks to 192K per side - 38K extra per disk *Author: Ian Cull*

DISK 5

CD Demo - An 8 track musical extravaganza. *Author: Players Software.*

Manager - An easy to use home accounting system. *Author: Peter Naughton.*

Hi Format - Formats disks to 203K per side! A must for your collection. *Author: Chris Pile.*

Amiga Ball - Screen\$ of the classic Amiga ball demo. *Author: Leif Mortensen.*

Optical Illusion - A brilliant Screen\$ of the infamous "waterfall". *Author: Owen Brown.*

Box Clever - A simple, yet challenging puzzle game. *Author: Dave Tonks.*

Up The Wall - A maze style game, with a twist! *Author: Dave Tonks.*

AI Demo - Artificial intelligence game. *Author: D.Smith.*

Biorhythms - Creates a graph of your biorhythms for a given month. *Author: D.Smith.*

Super Darts - An addictive darts game. *Author: D.Smith.*

Mastermind - A Mastermind game versus the computer. *Author: D.Smith.*

New Pointer Routine - Updated version of the program on disc 4. *Author: Daniel Garner.*

Jackson Assembler - A powerful Z80 assembler with full text editor. *Author: H.G.Zezschwitz.*

DISK 6

CDOS - Another program to make file operations easier. *Author: Robin Clayton.*

Gagdisk - A huge collection of jokes -

some dodgy. *Author: Anonymous.*

Monitor - A short but good disassembler with a working print option. *Author: K.Loudon.*

Disassembler - A great Z80 disassembler coping with the undocumented op-codes. *Author: D.Gorski.*

Ghost - 48K Spectrum emulator - some +3 incompatible games now work. *Author: M.Harris.*

Timed-Tables - Times tables test against the clock - one for the kids! *Author: P.Smith.*

Sums - Test your (and your childrens!) maths. *Author: K.Loudon.*

The Shrink - Got a problem? You need The Shrink! *Author: Unknown.*

Graveyard - Spooky scene over a graveyard. *Author: Owen Brown.*

Banner Maker - Create large

banners on Epson compatible printers. *Author: Keith Pirie.*
Music Trivia - Music Trivia for upto 4 players. *Author: Keith Pirie.*
One Arm Bandit - An addictive fruit machine simulator. *Author: Keith Pirie.*
The Rat - Searches through memory for 3 ASCII codes. *Author: David Wilson.*



Objects - Clip Art: test tube, phone dial, arrow, brush, syringe, graph. *Author: Keith Pirie.*
Japanese Patience - Version of the

classic card game, Patience. *Author: Dave Tonks.*
Oerkenvan - A difficult version of the classic card game, Patience. *Author: Leif Mortensen.*
4 in a Line - A two player game of "Connect 4" with great graphics. *Author: Dave Tonks.*
Garden - An amusing cartoon picture. *Author: Dave Tonks.*
Solitaire - Speccy version of the ancient game. *Author: P.Hampson.*
Solchess - A combination of solitaire and chess. *Author: P.Hampson.*
Smooth Scroll - A useful upwards scrolling routine with instructions. *Author: Paul Preston.*
Toolkit 50 - An excellent toolkit with over 20 functions. *Author: Leif Mortensen.*
Utility 1 - Great utility with UDG editor, TV test card and font editor. *Author: Geoff Wearmouth.*
Utility 2 - Easy to use utility with block delete and full renumber functions. *Author: Geoff Wearmouth.*



Linesplit - Splits a BASIC line in two to save retyping. *Author: Brian Gaff.*
Chezfill - A fast fill routine complete with demo. *Author:*

Chezron Software.
Grouf - A colourful fantasy picture. *Author: Leif Mortensen.*

Oh Sh@!! - Amusing and brilliantly drawn cartoon screen. *Author: Dave Tonks.*

Convert - A program for those useful number conversions. *Author: Ken Davies.*
ANSI Graphics - 20 useful UDGs similar to the ANSI set found in PCs. *Author: J.Dourish.*

REM Maker - Machine Coders! Create an empty REM statement of any size. *Author: M.Goodman.*
Mylinear - Linear interpolation. *Author: I.Miller.*

Milgraph - More linear interpolation. Plots graph of any function $y=f(x)$. *Author: I.Miller.*
Homesecc - Easy-to-use program to assess the security of your home. *Author: Keith Pirie.*

Clip Art - 3 more screens of PD clip art. *Author: Keith Pirie.*
Batman - Piccy of famous Batman logo. *Author: Chris Kelly.*

MC to BASIC - Great program to put machine code into DATA statements. *Author: M.Harris.*

Planet - Reasonable picture of a planet and its moon. *Author: K.Hardy.*

Ghost & Goblins - Picture from the famous game. *Author: K.Hardy.*

Menu - A very easy to use disk menu program, suitable for small children. *Author: Peter Naughton.*

Z80 Disassembler - Yep, it's another disassembler! *Author: Axel Schmice.*

Boom Box - A music demo with a selection of different tunes. *Author: B.Oreakov and H.Jensen.*

Drumbeat - A drum beat simulator allowing you to write your own beats. *Author: Unknown.*

Snake - Another simple but challenging game. *Author: Unknown.*

BASIC Compiler - An excellent program which converts BASIC into pure Machine Code. *Author: Unknown.*

32x42 Screen Display - Allows you to PRINT AT upto 32.42. *Author: Unknown.*

ASCII to BASIC - Allows you to create a BASIC program using a word-processor. *Author: Unknown.*



Trail Racer - Commercial quality arcade game. *Author: Dan Nielson.*
MaxiRAM - Enlarges drive M:

from 58K to 62K. *Author: D.Game and Brian Gaff.*

Ball Demo - Graphics demo. *Author: The Guardian.*
Editview 2 - Great Viewdata frame editor. *Author: Philip Aston.*

TV Test 2 - Make sure your TV is tuned in. *Author: The Guardian.*

Digishow - Great set of digitised pics. *Author: The Guardian.*



Simplex - Excellent sound sampler. *Author: The Guardian.*
DigiPix - A massive collection of digitised pictures.

Author: Grant Punchard.

Forth - A fully featured version of the Forth language. *Author: Unknown.*

CPM Disks



Features an expanded disk catalogue, DICE-like disk maintenance utility, disk copying tool and a very good Wordstar compatible

word processor.



A MASSIVE collection of programs and routines. Includes: anagram, biorhythms, calendars, currency conversion, disk

clean-up utility, file cruncher, library utility, Mastermind game, ASCII file displayer, base conversion, file sorter and much much more. There really isn't enough space here to list all the programs on this disk.



Another huge CP/M collection. Including: File extractor, FX80 printer tool, file printer, new RAM disk program, REM remover, find and exchange program,

"Wordstar" cleaner and more!
Something for everyone!



Another great assortment of files: useful text reformatter to print on BOTH sides of fan-fold paper, file chopper, control stripper, find word routine, sector editor (great for hackers!), word/line counter, SpeccyMex (+3 version of the modern utility Mex) and more! Serious +3 users will love this!



If you're into programming, get this. This volume contains an excellent version of the popular C language (with files, including a code optimiser!) PLUS a very comprehensive Z80 assembler.



Contains a version of the industry standard MICROSOFT BASIC. Also, files for Volume 3's C Compiler and more.



DBQ - a database with a powerful structured query language, designed for ease of use. Complete with 39K on-disk manual.



DIMS - an easy to use card-index style database capable of mail merge, label printing, etc. Can create mail merge files for Tasword +3.



Contains DU49 which is a superb multi disk formatter and PLOT33 which will turn your printer into a graphics plotter!

Please note that all our CP/M volumes require the CP/M operating system to work. A proportion of the programs also need a version of BASIC to run, either Mallard Basic or Microsoft Basic.

PD Library

ALL THE BEST PUBLIC DOMAIN SOFTWARE AVAILABLE FOR YOUR COMPUTER

SPECTRUM +3

The programs listed in this issue of Sinclair & SAM Computing are all for the Spectrum +3 and are supplied on 3" disc. However, in the true spirit of PD software we're keeping the cost down to a minimum by offering you the option of supplying your own 3" disc.

We've also introduced a guarantee whereby if we fail to send your order to you within 7 days of us receiving it, then just ask us for your money back and we'll oblige.

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Name

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**Garner Designs, 57 Lovers Walk, Dunstable,
Bedfordshire, LU5 4BG.**

◀ HAVE YOU WRITTEN A PROGRAM WHICH COULD BE PUBLIC DOMAIN?

There is no better way of getting your software distributed than via public domain channels such as our PD library. While there is no profit to be made from public domain, both the author and the distributor, it's an excellent way for you to get your name known.

Whatever software you've written you can be sure that there'll be other users who have been looking for. Quality is also not of utmost priority. Flashy displays and machine code programming don't figure in the scheme of PD software and as you'll see from the PD software available the quality ranges from bad right upto commercial quality.

So if you've written any kind of program then please send it to us for inclusion in our library. Please remember that although you probably know the program 'inside out', someone using for the first time may get stuck so please include either instructions in the program or as a separate .DOC file on the disc. As PD software can't be distributed with printed instructions, we have to give the user as much information in the program as possible so that they can get the

best out of the program.

Submissions to the PD library should be on 3" disc or if you own a 48K or 128K Spectrum then on cassette. All discs/cassettes will be returned to you when we have finished with them.

As well as seeing your name in the pages of Sinclair & SAM

Computing, we also offer a "three-for-one" swap scheme whereby for every program we accept into the library the author can choose any three programs from the library which we place on his disc/cassette before we return it to him/her.

ADVERTISERS Get Set For **92**

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COMPUTING



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VIDEO TITLING

Technical

In our continuing series, we start to put our VideoPro program together.

Not only will it be an ideal companion to budding video users, but you'll see how a program is conceived, designed, programmed (and then debugged!).

If the thought of typing in both programs is too daunting, then you can send us either a tape or a 3" disk, together with £2 to cover our costs, and we'll put both the programs listed here, and their resulting machine code files onto your tape/disk and send it straight back to you.

Our VideoPro project is finally taking shape. May I take this opportunity to thank those readers who have written in to say what they'd like to see in the program. While I can certainly oblige on some requests, I'm afraid that others are a bit too advanced for the Speccy. However, I think that even those doubters amongst you will be pleasantly surprised at what VideoPro will offer you.

To kick off the programming, there are two listings to type in this month. They are both pointer routines which will form the main routines of the user environment. While I know that pointer controlled programs are not everybody's cup of tea, I feel sure that the program will benefit greatly from a 'point and click' environment.

The two listings are as follows. The first is the pointer routine for Kempston/Genius mouse users and the second listing is the pointer routine for keyboard control. Both listings are fairly straight-forward and although may be lengthy to type in, will provide a very important part of VideoPro. You may also like to use the routines in your own programs too.

In the next issue of S&SC, we'll be printing the program's Event Editor and other general 'house-keeping' routines. The Event Editor is really the heart of VideoPro and once you've typed that in, we'll be giving you the flesh of the program, i.e. effects routines, modules for including Music Writer files, sound samples, animations, etc. Next issue's column should also hopefully contain the first part of the SAM version of VideoPro.

INSTRUCTIONS

The listings which follow are both routines for the GUI (graphical user interface). The first listing enables an on-screen pointer to be moved around the screen using a Kempston or Genius mouse. The second listing does the same job except the pointer is moved using the keyboard.

Both the routines occupy roughly the same portion of memory. The is because both routines do not need to be loaded into memory at one time. Thus, at the beginning of a session the appropriate routine is called from tape/disk into memory.

Both routines are machine code and are set-up by typing in the programs and running them. When the code has been POKEd into memory, it is saved to tape or disk for future use. If you get an Input Error after running a program, this means that you have mistyped one or more data items.

The operation of both routines is similar. When executed, both display a pointer on the screen which can be moved around. With the mouse listing the pointer moves in correspondence to the movement of the mouse, and with the keyboard listing the pointer moves when the QAOP keys are pressed (up, down, left and right respectively). This will continue until the 'select button' is pressed. In the mouse listing this is if either or both mouse button are pressed, and in the keyboard listing this is when either the SPACE or M key is pressed.

The pointer routine is then exited from with the position of the pointer when the select button was pressed being 'deposited' at a location in memory.

For the mouse listing, the code is executed with a RANDOMIZE USR 62000, with locations 61000-61004 (inclusive) storing the X co-ordinate, Y co-ordinate, X pixel co-ordinate, Y pixel co-ordinate and button number (1=left, 2=right, 3=both) respectively.

For the keyboard listing, the code is executed with a RANDOMIZE USR 64500, with location 64000 holding the Y co-ordinate and 64001 holding the X co-ordinate. These can be translated into pixel co-ordinates using, $PX=Y*8$ and $PY=175-(21-X)*8$. Please note that the keyboard listing only recognises the QAOP and M keys in their upper-case state.

```

10 CLS
500 CLEAR 61899
505 PRINT "POKEing data. Please
wait ..."
507 LET tot:=0
510 FOR a=61950 TO 64372: READ
b
515 POKE a,b: LET tot:=tot+b
520 NEXT a
525 IF tot<>308587 THEN PRINT AT
5,0:FLASH 1;"INPUT ERROR!!!":
BEEP 1,5: STOP
540 PRINT AT 5,0;"Code Okay!"
550 SAVE "point.bin"CODE
61950,2425
1000 DATA 205,80,251,33,92
1005 DATA 251,34,108,92,33
1010 DATA 1,0,205,18,251
1015 DATA 17,110,251,205,254
1020 DATA 250,333,8,0,205
1025 DATA 56,251,205,173,28
1030 DATA 33,8,0,205,50
1035 DATA 251,205,173,28,33
1040 DATA 8,0,205,68,251
1045 DATA 205,173,28,33,8
1050 DATA 0,205,62,251,205
1055 DATA 173,28,33,0,0
1060 DATA 205,74,251,205,173
1065 DATA 28,33,224,241,34
1070 DATA 108,251,42,108,251
1075 DATA 54,1,42,108,251
1080 DATA 35,35,35,54,205
1090 DATA 0,25,54,170,42
1095 DATA 108,251,17,5,0
1100 DATA 25,54,34,42,108
1105 DATA 251,17,6,0,25
1110 DATA 54,71,42,108,251
1115 DATA 17,7,0,25,54
1120 DATA 4,42,108,251,17
1125 DATA 8,0,25,54,126
1130 DATA 42,108,251,17,9
1135 DATA 0,25,54,7,42
1140 DATA 108,251,17,10,0
1145 DATA 25,54,16,42,108
1150 DATA 251,17,11,0,25
1155 DATA 54,253,42,108,251
1160 DATA 17,12,0,25,54
1165 DATA 230,42,108,251,17
1170 DATA 13,0,25,54,1
1175 DATA 42,108,251,17,14
1180 DATA 0,25,54,79,42
1185 DATA 108,251,17,15,0
1190 DATA 25,54,201,33,223
1195 DATA 251,68,77,237,104
1200 DATA 38,0,34,92,251
1205 DATA 33,223,255,68,77
1210 DATA 237,104,38,0,205
1215 DATA 18,251,205,13,251
1220 DATA 129,58,46,140,4
1225 DATA 205,218,250,205,175
1230 DATA 54,205,149,250,34
1235 DATA 94,251,42,92,251
1240 DATA 17,250,0,205,124
1245 DATA 250,124,181,202,255
1250 DATA 242,33,250,0,34
1255 DATA 92,251,42,94,251
1260 DATA 17,8,0,205,125
1265 DATA 250,124,181,202,19
1270 DATA 243,33,8,0,34
1275 DATA 94,251,42,94,251
1280 DATA 34,102,251,42,94
1285 DATA 251,34,104,251,33
1290 DATA 119,251,1,55,0
1295 DATA 62,0,205,85,251
1300 DATA 42,108,251,35,237
1305 DATA 91,92,251,115,42
1310 DATA 108,251,35,35,237
1315 DATA 91,94,251,115,42
1320 DATA 108,251,205,193,250
1325 DATA 34,119,251,33,1
1330 DATA 0,34,96,251,229
1335 DATA 33,2,0,34,115
1340 DATA 251,225,195,147,243
1345 DATA 42,108,251,35,229
1350 DATA 42,94,251,229,42
1355 DATA 96,251,43,209,25
1360 DATA 209,235,115,42,108
1365 DATA 251,35,35,229,42
1370 DATA 94,251,43,209,235
1375 DATA 115,42,96,251,35
1380 DATA 17,119,251,43,41
1385 DATA 25,229,42,108,251
1390 DATA 205,193,250,235,225
1395 DATA 115,35,114,42,96
1400 DATA 251,35,34,96,251
1405 DATA 237,91,115,251,235
1410 DATA 167,237,82,210,87
1415 DATA 243,33,1,0,34
1420 DATA 96,251,229,33,3
1425 DATA 0,34,115,251,225
1430 DATA 195,238,243,42,108
1435 DATA 251,35,229,42,92
1440 DATA 251,229,42,96,251
1445 DATA 43,209,25,209,235
1450 DATA 115,42,108,251,35
1455 DATA 35,229,42,94,251
1460 DATA 43,43,209,235,115
1465 DATA 42,96,251,35,35
1470 DATA 35,17,119,251,43
1475 DATA 41,25,229,42,108
1480 DATA 251,250,193,250,235
1485 DATA 225,115,35,114,42
1490 DATA 96,251,35,34,96
1495 DATA 251,237,91,115,251
1500 DATA 235,167,237,82,210
1505 DATA 175,243,33,1,0
1510 DATA 34,96,251,229,33
1515 DATA 4,0,34,115,251
1520 DATA 225,195,75,244,42
1525 DATA 108,251,35,229,42
1530 DATA 92,251,229,42,96
1535 DATA 251,43,209,25,209
1540 DATA 235,115,42,108,251
1545 DATA 35,35,229,42,94
1550 DATA 251,43,43,43,209
1555 DATA 235,115,42,96,251
1560 DATA 17,6,0,25,17
1565 DATA 119,251,43,41,25
1570 DATA 229,42,108,251,205
1575 DATA 193,250,235,225,115
1580 DATA 35,114,42,96,251
1585 DATA 35,34,96,251,237
1590 DATA 91,115,251,235,167
1595 DATA 237,82,210,10,244
1600 DATA 33,1,0,34,96
1605 DATA 251,229,33,5,0
1610 DATA 34,115,251,225,195
1615 DATA 171,244,42,108,251
1620 DATA 35,229,42,92,251
1625 DATA 229,42,96,251,43
1630 DATA 209,25,209,235,115
1635 DATA 42,108,251,35,35
1640 DATA 229,42,94,251,17
1645 DATA 4,0,167,237,82
1650 DATA 209,235,115,42,96
1655 DATA 251,17,10,0,25
1660 DATA 17,119,251,43,41
1665 DATA 25,229,42,108,251
1670 DATA 205,193,250,235,225
1675 DATA 115,35,114,42,96
1680 DATA 251,35,34,96,251
1685 DATA 237,91,115,251,235
1690 DATA 167,237,82,210,103
1695 DATA 244,33,1,0,34
1700 DATA 96,251,229,33,6
1705 DATA 0,34,115,251,225
1710 DATA 195,11,245,42,108
1715 DATA 251,35,229,42,92
1720 DATA 251,229,42,96,251
1725 DATA 43,209,25,209,235
1730 DATA 115,42,108,251,35
1735 DATA 35,229,42,94,251
1740 DATA 17,5,0,167,237
1745 DATA 82,209,235,115,42
1750 DATA 96,251,17,15,0

```

1755 DATA 25,17,119,251,43
 1760 DATA 41,25,229,42,108
 1765 DATA 251,205,193,250,235
 1770 DATA 225,115,35,114,42
 1775 DATA 96,251,35,34,96
 1780 DATA 251,237,91,115,251
 1785 DATA 235,167,237,82,210
 1790 DATA 199,244,33,1,0
 1795 DATA 34,96,251,229,33
 1800 DATA 3,0,34,115,251
 1805 DATA 225,195,107,245,52
 1810 DATA 108,251,35,229,42
 1815 DATA 92,251,229,42,96
 1820 DATA 251,43,209,25,209
 1825 DATA 235,115,42,108,251
 1830 DATA 35,35,229,42,94
 1835 DATA 251,17,6,0,167
 1840 DATA 237,82,209,235,115
 1845 DATA 42,96,251,17,21
 1850 DATA 0,25,17,119,251
 1855 DATA 43,41,25,229,42
 1860 DATA 108,251,205,193,250
 1865 DATA 235,225,115,35,114
 1870 DATA 42,96,251,35,34
 1875 DATA 96,251,237,91,115
 1880 DATA 251,235,167,237,82
 1885 DATA 210,39,245,42,108
 1890 DATA 251,35,237,91,92
 1895 DATA 251,115,42,108,251
 1900 DATA 35,35,229,42,94
 1905 DATA 251,17,7,0,167
 1910 DATA 237,82,209,235,115
 1915 DATA 42,108,251,205,193
 1920 DATA 250,34,167,251,42
 1925 DATA 108,251,35,229,42
 1930 DATA 92,251,35,35,35
 1935 DATA 209,235,115,42,108
 1940 DATA 251,35,35,229,42
 1945 DATA 94,251,17,7,0
 1950 DATA 167,237,82,209,235
 1955 DATA 115,42,108,251,205
 1960 DATA 193,250,34,169,251
 1965 DATA 42,108,251,35,229
 1970 DATA 42,92,251,35,35
 1975 DATA 35,209,235,115,42
 1980 DATA 108,251,35,35,229
 1985 DATA 42,94,251,17,8
 1990 DATA 0,167,237,82,209
 1995 DATA 235,115,42,108,251
 2000 DATA 205,193,250,34,171
 2005 DATA 251,42,92,251,229
 2010 DATA 42,94,25,193,69
 2015 DATA 205,229,34,33,0
 2020 DATA 0,205,18,251,33
 2025 DATA 249,255,205,26,251
 2030 DATA 205,183,36,33,1
 2035 DATA 0,205,18,251,33
 2040 DATA 1,0,205,18,251
 2045 DATA 205,183,36,33,0
 2050 DATA 0,205,18,251,33
 2055 DATA 5,0,205,18,251
 2060 DATA 205,183,36,33,1
 2065 DATA 0,205,18,251,33
 2070 DATA 255,255,205,26,251
 2075 DATA 205,183,36,33,0
 2080 DATA 0,205,18,251,33
 2085 DATA 252,255,205,26,251
 2090 DATA 205,183,36,33,1
 2095 DATA 0,205,18,251,33
 2100 DATA 255,255,205,26,251
 2105 DATA 205,183,36,33,0
 2110 DATA 0,205,18,251,33
 2115 DATA 255,255,205,26,251
 2120 DATA 205,183,36,33,0
 2125 DATA 0,205,18,251,33
 2130 DATA 1,0,205,18,251,33
 2135 DATA 205,183,36,33,255
 2140 DATA 255,205,26,261,33 251
 2145 DATA 1,0,205,18,251
 2150 DATA 205,183,36,33,1
 2155 DATA 0,205,18,251,33
 2160 DATA 1,0,205,18,251
 2165 DATA 205,183,36,33,0
 2170 DATA 0,205,18,251,33
 2175 DATA 2,0,205,18,251
 2180 DATA 205,183,36,33,1
 2185 DATA 0,205,18,251,33
 2190 DATA 255,255,205,26,251
 2195 DATA 205,183,36,33,0
 2200 DATA 0,205,18,251,33
 2205 DATA 255,255,205,26,251
 2210 DATA 205,183,36,33,1
 2215 DATA 0,205,18,251,33
 2220 DATA 0,0,205,18,251
 2225 DATA 205,183,36,33,110
 2230 DATA 251,205,180,51,205
 2235 DATA 149,250,124,181,202
 2240 DATA 234,246,205,25,248
 2245 DATA 33,0,0,205,18
 2250 DATA 251,17,110,251,205
 2255 DATA 254,250,195,31,243
 2260 DATA 33,223,251,68,77
 2265 DATA 237,104,38,0,34
 2270 DATA 98,251,33,223,255
 2275 DATA 68,77,237,104,38
 2280 DATA 0,205,18,251,205
 2285 DATA 13,251,129,58,46
 2290 DATA 140,4,205,218,250
 2295 DATA 205,175,54,205,149
 2300 DATA 250,34,100,251,33
 2305 DATA 223,250,68,77,237
 2310 DATA 104,38,0,34,106
 2315 DATA 251,42,106,251,17
 2320 DATA 255,0,205,141,250
 2325 DATA 124,181,194,138,247
 2330 DATA 42,102,251,237,91
 2335 DATA 98,251,205,133,250
 2340 DATA 229,42,104,251,237
 2345 DATA 91,100,251,205,133
 2350 DATA 250,124,181,209,40
 2355 DATA 1,235,124,181,194
 2360 DATA 234,246,42,98,251
 2365 DATA 17,250,0,205,124
 2370 DATA 250,124,181,194,234
 2375 DATA 246,42,100,251,17
 2380 DATA 8,0,205,125,250
 2385 DATA 124,181,194,234,246
 2390 DATA 205,25,248,42,98
 2395 DATA 251,34,92,251,42
 2400 DATA 100,251,34,94,251
 2405 DATA 42,92,251,34,102
 2410 DATA 251,42,94,251,34
 2415 DATA 104,251,195,31,243
 2420 DATA 205,25,248,42,92
 2425 DATA 251,237,91,98,251
 2430 DATA 205,141,250,124,181
 2435 DATA 202,162,247,42,98
 2440 DATA 251,34,92,251,42
 2445 DATA 94,251,237,91,100
 2450 DATA 251,205,141,250,124
 2455 DATA 181,202,183,247,42
 2460 DATA 100,251,34,94,251
 2465 DATA 42,106,251,17,254
 2470 DATA 0,205,133,250,124
 2475 DATA 181,202,206,247,33
 2480 DATA 2,0,34,106,251
 2485 DATA 195,252,247,42,106
 2490 DATA 251,17,253,0,205
 2495 DATA 133,250,124,181,202
 2500 DATA 229,247,33,1,0
 2505 DATA 34,106,251,195,252
 2510 DATA 247,42,106,251,17
 2515 DATA 252,0,205,133,250
 2520 DATA 124,181,202,252,247
 2525 DATA 33,3,0,34,106
 2530 DATA 251,195,252,247,33
 2535 DATA 204,241,237,91,92
 2540 DATA 251,115,33,205,241
 2545 DATA 237,91,94,251,115
 2550 DATA 33,206,241,237,91
 2555 DATA 106,251,115,33,88
 2560 DATA 39,217,201,42,119
 2565 DATA 251,205,240,250,205
 2570 DATA 74,251,205,173,28
 2575 DATA 42,92,251,229,42

2580 DATA 94,251,193,69,205
 2585 DATA 229,34,33,1,0
 2590 DATA 34,96,251,229,33
 2595 DATA 2,0,34,115,251
 2600 DATA 225,195,112,248,42
 2605 DATA 96,251,35,17,119
 2610 DATA 251,205,210,250,205
 2615 DATA 240,250,205,74,251
 2620 DATA 205,173,28,42,92
 2625 DATA 251,229,42,96,251
 2630 DATA 43,209,25,229,42
 2635 DATA 94,251,43,193,69
 2640 DATA 205,229,34,42,96
 2645 DATA 251,35,34,96,251
 2650 DATA 237,91,115,251,235
 2655 DATA 167,237,82,210,66
 2660 DATA 248,33,1,0,34
 2665 DATA 96,251,229,33,3
 2670 DATA 0,34,115,251,225
 2675 DATA 195,189,248,42,96
 2680 DATA 251,35,35,17
 2685 DATA 119,251,205,210,250
 2690 DATA 205,240,250,205,74
 2695 DATA 251,205,173,28,42
 2700 DATA 92,251,229,42,96
 2705 DATA 251,43,209,25,229
 2710 DATA 42,94,251,43,43
 2715 DATA 193,69,205,229,34
 2720 DATA 42,96,251,35,34
 2725 DATA 96,251,237,91,115
 2730 DATA 251,235,167,237,82
 2735 DATA 210,140,248,33,1
 2740 DATA 0,34,96,251,229
 2745 DATA 33,4,0,34,115
 2750 DATA 251,225,195,12,249
 2755 DATA 42,96,251,17,6
 2760 DATA 0,25,17,119,251
 2765 DATA 205,210,250,205,240
 2770 DATA 250,205,74,251,205
 2775 DATA 173,28,42,92,251
 2780 DATA 229,42,96,251,43
 2785 DATA 209,25,229,42,94
 2790 DATA 251,43,43,43,193
 2795 DATA 69,205,229,34,42
 2800 DATA 96,205,229,34,42
 2805 DATA 251,237,91,115,251
 2810 DATA 235,167,237,82,210
 2815 DATA 217,248,33,1,0
 2820 DATA 34,96,251,229,33
 2825 DATA 5,0,34,115,251
 2830 DATA 225,195,94,249,42
 2835 DATA 96,251,17,10,0
 2840 DATA 25,27,119,251,205
 2845 DATA 210,250,205,240,250
 2850 DATA 205,74,251,205,173
 2855 DATA 28,42,92,251,229
 2860 DATA 42,96,251,43,209
 2865 DATA 25,229,42,94,251
 2870 DATA 17,4,0,167,237
 2875 DATA 82,193,69,205,229
 2880 DATA 34,42,96,251,35
 2885 DATA 34,96,251,237,91
 2890 DATA 115,251,235,167,237
 2895 DATA 82,210,40,249,33
 2900 DATA 1,0,34,96,251
 2905 DATA 229,33,6,0,34
 2910 DATA 115,251,225,195,176
 2915 DATA 249,42,96,251,17
 2920 DATA 15,0,25,17,119
 2925 DATA 251,205,210,250,205
 2930 DATA 240,250,205,74,251
 2935 DATA 205,173,28,42,92
 2940 DATA 251,229,42,96,251
 2945 DATA 43,209,25,229,42
 2950 DATA 94,251,17,5,0
 2955 DATA 167,237,82,193,69
 2960 DATA 205,229,34,42,96
 2965 DATA 251,35,34,96,251
 2970 DATA 237,91,115,251,235
 2975 DATA 167,237,82,210,122
 2980 DATA 249,33,1,0,34
 2985 DATA 96,251,229,33,3
 2990 DATA 0,34,115,251,225
 2995 DATA 195,2,250,42,96
 3000 DATA 251,17,21,0,25
 3005 DATA 17,119,251,205,210
 3005 DATA 17,119,251,205,210
 3010 DATA 250,205,240,250,205
 3015 DATA 74,251,205,173,28
 3020 DATA 42,92,251,229,42
 3025 DATA 96,251,43,209,25
 3030 DATA 229,42,94,251,17
 3035 DATA 6,0,167,237,82
 3040 DATA 193,69,205,229,34
 3045 DATA 42,96,251,35,34
 3050 DATA 96,251,237,91,115
 3055 DATA 251,235,167,237,82
 3060 DATA 210,204,249,42,167
 3065 DATA 251,205,240,250,205
 3070 DATA 74,251,205,173,28
 3075 DATA 42,92,251,229,42
 3080 DATA 94,251,17,7,0
 3085 DATA 167,237,82,193,69
 3090 DATA 205,229,34,42,169
 3095 DATA 251,205,240,250,205
 3100 DATA 74,251,205,173,28
 3105 DATA 42,92,251,35,35
 3110 DATA 35,229,42,94,251
 3115 DATA 17,7,0,167,237
 3120 DATA 82,193,69,205,229
 3125 DATA 34,42,171,251,205
 3130 DATA 240,250,205,74,251
 3135 DATA 205,173,28,42,92
 3140 DATA 251,35,35,35,229
 3145 DATA 42,94,251,17,8
 3150 DATA 0,167,237,82,193
 3155 DATA 69,205,229,34,33
 3160 DATA 0,0,205,74,251
 3165 DATA 205,173,28,201,83
 3170 DATA 88,39,217,201,235
 3175 DATA 175,237,82,103,111
 3180 DATA 208,44,201,175,237
 3185 DATA 82,103,111,192,44
 3190 DATA 201,175,237,82,103
 3195 DATA 111,200,44,201,205
 3200 DATA 191,53,126,167,40
 3205 DATA 27,229,205,13,251
 3210 DATA 127,127,255,255,255
 3215 DATA 225,35,203,126,196
 3220 DATA 248,250,205,229,250
 3225 DATA 205,20,50,126,167
 3230 DATA 194,220,53,34,101
 3235 DATA 92,35,35,94,35
 3240 DATA 86,235,201,68,77
 3245 DATA 205,44,22,197,253
 3250 DATA 33,58,92,62,2
 3255 DATA 205,1,22,225,201
 3260 DATA 43,41,25,94,35
 3265 DATA 86,235,201,205,39
 3270 DATA 251,205,175,49,237
 3275 DATA 83,101,92,201,205
 3280 DATA 39,251,205,20,48
 3285 DATA 237,83,101,92,201
 3290 DATA 125,180,33,0,0
 3295 DATA 192,44,201,205,191
 3300 DATA 53,195,110,52,42
 3305 DATA 101,92,1,5,0
 3310 DATA 167,237,66,34,101
 3315 DATA 92,237,176,201,225
 3320 DATA 205,180,51,233,175
 3325 DATA 95,85,76,71,195
 3330 DATA 182,42,175,95,203
 3335 DATA 124,40,1,29,85
 3340 DATA 76,71,195,182,42
 3345 DATA 42,101,92,1,251
 3350 DATA 255,9,84,93,9
 3355 DATA 201,62,16,85,195
 3360 DATA 17,34,62,17,85
 3365 DATA 195,17,34,62,18
 3370 DATA 85,195,17,34,62
 3375 DATA 19,85,195,17,34
 3380 DATA 62,21,85,195,17
 3385 DATA 34,62,2,195,1
 3390 DATA 22,84,93,119,19
 3395 DATA 237,176,201,137,0

```

3400 DATA 101,0,4,0,137
3405 DATA 0,101,0,137,0
3410 DATA 101,0,2,0,224
3415 DATA 241,0,0,0,0
3420 DATA 0,3,0,0,0

10 CLS
500 CLEAR 61999
505 PRINT "POKEing data. Please
wait ..."
507 LET tot=0
510 FOR a=61950 TO 64525: READ
b
512 IF b=999 THEN GOTO 500
515 POKE a,b: Let tot=tot+b
520 NEXT a
525 IF tot<>66744 THEN PRINT AT
5,0:FLASH 1;"INPUT ERROR!!!":
BEEP 1,5: STOP
540 PRINT AT 5,0;"Code Okay!"
550 SAVE "POINT2.BIN"CODE
62986,1600
599 STOP
600 READ c: FOR x=0 TO (c-1):
POKE (a+x),0: NEXT x: LET a=a+c
605 GOTO 520
1000 DATA 241,193,62,64,237
1005 DATA 75,102,91,129,50
1010 DATA 250,255,193,241,245
1015 DATA 197,229,62,5,50
1020 DATA 9,92,62,1,50
1025 DATA 10,92,237,75,0
1030 DATA 250,58,7,250,254
1035 DATA 1,40,3,205,219
1040 DATA 246,253,203,1,110
1045 DATA 40,250,253,203,1
1050 DATA 174,58,8,92,33
1055 DATA 2,250,190,40,26
1060 DATA 33,3,250,190,40
1065 DATA 34,33,4,250,190
1070 DATA 40,42,33,5,250
1075 DATA 190,40,50,33,6
1080 DATA 250,190,40,73,24
1085 DATA 211,120,254,0,40
1090 DATA 206,205,64,247,5
1095 DATA 205,219,246,24,42
1100 DATA 120,254,23,40,192
1105 DATA 205,64,247,4,205
1110 DATA 219,246,24,28,121
1115 DATA 254,0,40,178,205
1120 DATA 64,247,13,205,219
1125 DATA 246,24,14,1,21,254
1130 DATA 31,40,164,205,64
1135 DATA 247,12,205,219,246
1140 DATA 24,0,58,8,250
1145 DATA 197,71,14,255,11
1150 DATA 120,177,32,251,193
1155 DATA 24,140,120,50,1
1160 DATA 250,121,50,0,250
1165 DATA 58,7,250,254,1
1170 DATA 40,3,205,64,247
1175 DATA 62,5,50,10,92
1180 DATA 62,35,50,9,92
1185 DATA 225,193,241,201,0
1190 DATA 205,112,248,201,195
1195 DATA 88,255,51,63,205
1200 DATA 132,248,201,183,103
1205 DATA 229,241,0,201,245
1210 DATA 197,213,229,221,229
1215 DATA 205,49,247,197,17
1220 DATA 44,251,205,22,247
1225 DATA 221,33,100,250,17
1230 DATA 116,250,205,33,247
1235 DATA 193,120,254,23,40
1240 DATA 20,4,205,49,247
1245 DATA 17,52,251,205,22
1250 DATA 247,221,33,108,250
1255 DATA 17,124,250,205,33
1260 DATA 247,221,225,225,209
1265 DATA 193,241,201,229,6
1270 DATA 8,128,18,36,19
1275 DATA 16,250,225,201,6
1280 DATA 8,26,47,166,221
1285 DATA 182,0,119,221,35
1290 DATA 19,36,16,243,201
1295 DATA 120,230,248,193,64
1300 DATA 103,120,230,7,15
1305 DATA 15,15,129,111,201
1310 DATA 245,197,213,229,205
1315 DATA 49,247,197,17,44
1320 DATA 251,205,99,247,193
1325 DATA 120,254,23,40,10
1330 DATA 4,205,49,247,17
1335 DATA 52,251,205,99,247
1340 DATA 225,209,193,241,201
1345 DATA 6,8,26,119,19
1350 DATA 36,16,250,201,7
1355 DATA 4,0,5,113,97
1360 DATA 111,112,32,0,254
1365 DATA 16,16,16,16,16
1370 DATA 0,0,254,16,16
1375 DATA 16,16,16,0,0
1380 DATA 64,96,112,120,124
1385 DATA 126,112,72,8,0
1390 DATA 0,0,0,0,0
1395 DATA 224,240,248,252,254
1400 DATA 255,255,255,252,252
1405 DATA 28,0,0,0,0
1410 DATA 0,0,0,0,113
1415 DATA 97,111,112,32,0
1420 DATA 999,40
1460 DATA 0,0,0,0,12
1465 DATA 5,0,10,0,60
1470 DATA 66,60,66,66,60
1475 DATA 0,0,4,4,60
1480 DATA 68,68,60,0,0
1485 DATA 999,15
1500 DATA 0,0,0,0,127
1505 DATA 49,57,56,57,32
1510 DATA 71,46,68,46,0
1515 DATA 64,96,112,120,124
1520 DATA 126,112,72,8,0
1525 DATA 0,0,0,0,0
1530 DATA 224,240,248,252,254
1535 DATA 255,255,255,252,252
1540 DATA 28,0,0,0,32
1545 DATA 84,104,105,115,32
1550 DATA 0,0,0,0,0
1555 DATA 0,0,0,80,76
1560 DATA 85,83,51,68,79
1565 DATA 83,0,0,0,0
1570 DATA 999,35
1605 DATA 0,245,229,42,120
1610 DATA 92,35,34,120,197
1615 DATA 237,75,0,250,205
1620 DATA 219,248,193,201,0
1625 DATA 0,0,0,0,0
1630 DATA 0,0,0,0,197
1635 DATA 237,75,0,250,205
1640 DATA 64,247,193,201,0
1645 DATA 999,365
2010 DATA 0,0,0,0,19
2015 DATA 10,81,65,79,80
2020 DATA 32,0,10,0,0
2025 DATA 999,90
2115 DATA 64,96,112,120,124
2120 DATA 126,112,72,8,0
2125 DATA 0,0,0,0,0
2130 DATA 224,240,248,252,254
2135 DATA 255,255,255,252,252
2140 DATA 28,0,0,0,0
2145 DATA 999,365
2510 DATA 0,0,0,0,205
2515 DATA 24,246,1,6,0
2520 DATA 17,100,0,10,38
2525 DATA 0,111,197,205,181
2530 DATA 3,193,11,120,177
2535 DATA 200,24,241,201,0

```

Music Writer EXTENSIONS

Compiler

A feature lacking of Music Writer has always been that any music you created was non-transportable - basically, you could only really play it from within Music Writer. Compiler aims

to change all this by allowing Music Writer's MSC music files to be compiled into a form which can be played by a public domain player program or easily within your own programs.

You get two main programs with the

Three part music system for all SPECTRUM 128K computers

Music Writer

TM
© 1989 SPECTRUM SOFTWARE

package. Firstly, there is the XTN which must be loaded into the main Music Writer program, and then there is the MWPlay which is the public domain player program.

The XTN program works by compiling the music code for the selected parts within a marked block of your music.

As RAM is used as a storage buffer during compilation, there is a limit on the maximum length of music you can compile. Thankfully, you can compile a piece into multiple sections which can subsequently be re-joined within MWPlay. Using simple voice patterns also results in more compact code, so one way or another the compilation process is quite painless.

The resultant compiled music code can be then saved to disk or tape or loading into the MWPlay program.

MWPlay is a neat little program which enables your compiled music code to be played. The program has been placed into the public domain so that anyone can distribute their own creations (or copyright free creations) quickly and easily.

As I mentioned above, long music files which have been split into sections can be rejoined. In fact, upto ten sections can be loaded into MWPlay.

Once all the required files are loaded, you can also edit the title page which will display the title of the music playing, the composer and any comments about it.

A play option enables you to see that everything sounds okay, and that if you loaded multiple compiled music files that they are in the correct order. If everything is okay, then the save option allows just the music and the player program to be saved to tape or disc.

When this file is subsequently reloaded, the title page is displayed straight after loading and the music will



BLUE TAIL FLY

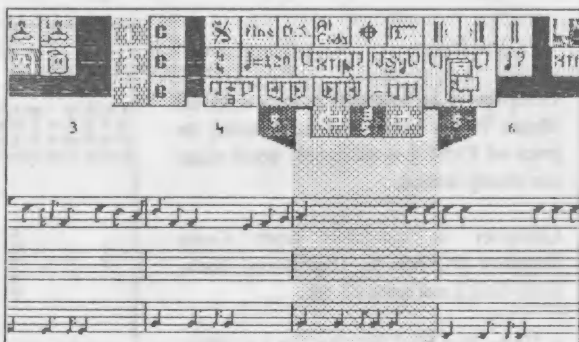
(traditional)

Better known
as Jimmy
Crack Corn!
Arranged by
Garry Rowland

Press any key
to stop

PLAYS COMPILED MUSIC WRITER FILES
PROGRAM BY GARRY ROWLAND

The screenshot shows a title screen for a music player. At the top, it says 'BLUE TAIL FLY' in a large, bold font. Below that, it indicates '(traditional)' and provides background information: 'Better known as Jimmy Crack Corn! Arranged by Garry Rowland'. On the right side, there is a circular graphic with the word 'PLAY' in large letters, and an illustration of three people playing instruments (a saxophone, a keyboard, and a guitar). At the bottom, there are instructions: 'Press any key to stop' and 'PLAYS COMPILED MUSIC WRITER FILES PROGRAM BY GARRY ROWLAND'.



The screenshot displays a music notation interface. At the top, there is a control panel with various icons and text labels such as 'fine', 'Coda', 'J=120', 'TEXT', 'J=120', 'J=120', 'J=120', 'ATI'. Below the control panel, there are several staves of music notation. The notation includes notes, rests, and bar lines. There are also some numerical indicators like '3', '4', and '6' placed below the staves. The interface appears to be a graphical representation of a music score being played or edited.



**MAKE
MUSIC,
NOT
WAR!**



Support creative software.

start to play once a key has been pressed.

As well as being able to use MWPlay to play back your creations, a full assembly source code listing is provided to allow you to play compiled music within your own programs. This is a very useful addition indeed.

Now anybody with an assembler can simply type in the source code and include music in any of their programs.

With Music Writer being such an accomplished tool for the creation of music by virtually anyone, the release of Compiler by Garry Rowland opens up a new avenue for Music Writer users to explore.

Compiler is an essential purchase for all Music Writer users, and considering its price of £3.50 it is extremely good value for money indeed.

Compiler is available from Garry Rowland (PO Box 49, Dagenham, Essex, RM9 5NY) and costs £3.50.

• Garry Rowland has also set up MWA (Music Writers Anonymous) which plans to distribute users' creations and arrangements on tape or +3 disk. Three sets of music is already available. MWPlay provides the ideal medium through which your Music Writer creations can be distributed to others, via MWA and other public domain libraries.

You can find out more by sending an SAE to: MWA, PO Box 49, Dagenham, Essex, RM9 5NY.

MWPLAY EDITOR

This program may be freely distributed subject to copyright conditions attached to any music included with the program.

1. CREATE PLAY FILE
2. EDIT/PLAY SEQUENCE
3. EDIT TITLE
4. SAVE PLAYER+MUSIC
5. DELETE ALL MUSIC

Spectrum 128Ks

VERDICT

- ✓ Excellent value for money
- ✓ Easy to use
- ✓ A very useful program indeed
- ✗ For £3.50, if there are any bad points (and I couldn't come up with any) aren't worth considering.

89%

The other new XTN program for Music Writer is MIDI.XTN.

While all the Spectrums have at some point had some sort of MIDI facility available to them, the 128K Spectrums have always been equipped due to the built-in MIDI out port. MIDI.XTN enables your Music Writer creations to be played on a MIDI instrument linked to the MIDI port, or via the RAM Music Machine, Micron XRi, Cheetah or EMR interfaces. These options cover virtually every MIDI interface which has been used on Spectrums which is a good feature of the program.

As with the Compiler, the MIDI extension is loaded as a normal Music Writer XTN file, and operates on the range of bars selected with the block mark options of Music Writer.

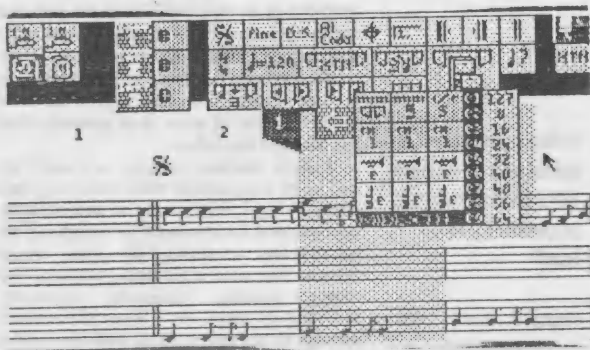
Selecting the XTN Block icon brings up the MIDI window which contains a number of icons. Icons are available to: change the interface port (as described above), change which MIDI channels are assigned to each of the three parts of your music, map the voices used in your music to voices on your MIDI instrument, map notes in particular voices to a chord look up table, and play the selected block of music through your MIDI synth.

MIDI.XTN will interpret all the effects you place upon notes in your piece of music. For example, dynamic marks and accents are treated as varying degrees of note velocity on your MIDI synth. Assuming your synth supports note velocity, the use of dynamic marks can give your creations a 'fuller' feel.

It seems as if Garry Rowland has come up trumps again, not only does Compiler add a new aspect to creating music with Music Writer, but so does MIDI.XTN which adds

MIDI

a features I'd been looking for in a Spectrum music package for ages, i.e. note composition facilities with direct MIDI output. While some other packages had attempted it, none have achieved it so well and in a way that flows seamlessly into Music Writer's excellent user interface. MIDI.XTN is available from Garry Rowland (PO Box 49, Dagenham, Essex, RM9 5NY) and costs £10.



Spectrum 128Ks

VERDICT

- ✓ Good range of features
Easy to use
- ✗ Instructions are a bit complicated.

85%

Assembling for Beginners

On Test

SC_Assembler

Steve's Software

Writing in assembler is an activity reserved for those with a better than average programming ability. Right?

Wrong. But how do more novice programmers get into the realm of assembly programming? M.Perry checks out an assembler package which claims to be easy for novices to learn yet powerful enough for competent programmers.

By M.R.Perry

This is not an in depth technical review, it is more aimed at those just starting to come to grips with machine code and considering their first assembler program.

The experienced programmer would have used one or more assemblers in the past and drawn up their own set of criteria as to what they expect from such a program. They would also have become accustomed to their existing program(s) so would have a different point of view than someone that has not used one before.

I am in this latter category so I won't try and make comparisons with other programs except to say I did try using an assembler on the Spectrum but it seemed to be fighting me all the way - refusing to accept entries because they were in the wrong position, had wrong spacing, assembly repeatedly throwing up errors, etc. I never did actually manage to get any machine code assembled and being put off such programs "for life" resorted to pen and paper.

It was therefore with some misgivings that I considered an assembler for SAM, but, the advert for the SC-Assembler stated "easy enough for the beginner. Powerful enough for top programmers...". So I decided to give it a try. Does it live up to its claim for beginners? Read on.

The delivery was exceptionally fast so off to a good start. You get a disc and 45 page manual. First thing is to make a back up of the disc "just in case of accidents". You also need 2 discs with the DOS file on already.

The first few pages of the manual relate to making a customised working copy and after loading the program you are presented with

a choice of which of 32 characters sets you prefer. Each set can be displayed and the one to suit your preference selected.

Next choice is to set pen and paper colours. Now this I found to be a bit of a so and so! With 128 paper and 128 pen colours there is a wide range of combinations. However, eventually a pair that suited both my colour and black&white monitors was found. It is helped by a test display of your selection which is given before you are committed to a choice. The working copy of SC_Assembler is then saved to your disc.

The disc also contains a Spectrum emulation program that uses your own Spectrum ROM that has been saved to tape. This program is fully screen prompted, and is saved to the second disc. I tested the emulator out with a couple of Disciple snapshots (that have to be "converted" via a menu option first and resaved to disc). All seemed to be okay and ran without a hitch. The emulator also allows Spectrum tapes to be loaded. I do have some reservations though in that it has crashed a

```

00010          OPB  00760
00020          PUT  00760
00030          OPR:EDU #0110
00040 ;*****
00050 ;Print message "SAM Coupe"
00060 ;*****
00070 ;ORG STREAM 2
00080          LD   A,2
00090          CALL OPR0
00100 ;Print the message starting in register HL
00110          LD   HL,500000
00120          LOOP:LD  A,(HL)
00130          RNC
00140          RET  A
00150          PUSH HL
00160          RET  16
00170          POP  HL
00180          INC  HL
00190          JP   LOOP
00200          RET
00210          500000:DB "SAM Coupe"

```

SAVE	500000	1	01	00010	00050	00000	00000	00000	00000
------	--------	---	----	-------	-------	-------	-------	-------	-------

few times and "real time" programs such as a slow scan TV, seem to be running at the wrong speed - further investigation is needed though.

Back to the assembler. The disc contains versions for both 256K and 512K machines. The handbook really needs reading though two or three times before you seriously attempt to use SC_Assembler. While for a beginner there is probably some things that do not mean a lot at this stage, the handbook does make finding things easier when actually using the program. The handbook also contains a example program for beginners which gives a good insight and explanation into the basic sequence of procedures to assemble code.

I asked the question earlier "did it live up to its advertised claim of being simple?". Bearing in mind my total failure with the Spectrum, the same day I had this program I had used the Disassembler function to provide me with a source code listing of a routine I had previously written with good old fashioned pen and paper. This was then

entered into the assembler, reassembled, saved to disc and could then be re-run on the SAM. I consider that it certainly does live up to its claim. Remember however, this is an assembler program and not an instructional course in machine code programming, so obviously other sources of tuition are needed for the novice.

One of the main reasons for this user friendly and ease of use of operation is that it sorts out your "sloppy" entries into the assembler. It accepts your incorrect spacing and puts the various elements of a line in a tidy format on screen. If it does come against something that is obviously incorrect the error is reported in plain English, not an error code that has to be looked up in a list.

Take an example:

```
10 LD A,22
```

if typed in as 10LDA.22 or 10L DA.22 or 10L D A .22 and so on the program can still sort out that you want 10 LD A.22.

There are some opcodes to be wary of which are listed in the handbook, i.e.

CPD, CP D. RLD, RL D for example.

Even so while LDD and LD D are both valid op code there is not a LDD,22 so it is corrected to LD D,22. To miss-enter LD D you would have to forget both the , and the 22.

IN a,(245 reports "() expected". RST 88 tells you its a BAD RST. LD a, gives the error report "variable missing". LD a,300 reports "number too big". This information reporting is a big advantage as it virtually tells you what to do to put it right.

There are two lines of thoughts on this auto correcting that come to mind. One being that it can lead to bad habits that may cause problems if you move onto a "more fussy" routine. Secondly and one I prescribe to, is that for a beginner it allows them to concentrate on writing the code without having to worry about the added complication of "do I put 1 or 2 spaces here?", "do I need a space between this label and that code of not?". The corrected on-screen listing answers these questions for you and you start to begin to recognise the correct form of code entry.

There is also the advantage for experienced programmers that they do not have to spend time correcting simple spacing errors or tabbing across screen to arrive at the desired result.

For example, the lines:

```
99out(254),a
100test:ld,b,88
```

are automatically corrected to:

```
00099          OUT  (254),A
00100 TEST: LD  B,88
```

Some codes have been shortened, for example DEFb becomes DB and DEFS to DS. This may cause initial hiccups with those used to the full form. However, with use it becomes second nature.

Having entered your source code, it is ready for assembly into machine code. However, not before you save it to disc in case of problems.

+S takes you into the SAVE option. Most commands in SC Assembler are single letter. For example "I" is the list command, "F" is the find string command. Some are preceded with "+", for example "+D" for decimal mode and "+H" for hex mode. The function keys have also been defined to invoke various features as well as being able to be used as a numerical keypad. I would estimate there are some 75 functions/commands associated with the entering, editing and assembling, disc and printer control. These can only be learnt and remembered from use.

Space does not allow a detailed technical description here, but I think a brief rundown should help the more experienced users to decide if SC Assembler is to their requirements.

Source code is entered into banks - 3 on a 256K SAM and 9 on a 512K SAM. Each bank holds 32K. The current bank in use has an indicator to show how much room has been used. The 256K version of the program accepts upto 10000 lines of source code. The 512K version will assembler 288K of source code giving almost 64K of machine code. The disassembler can handle RAM, both ROM 0 and 1 and the DOS. As well as the standard opcodes the assembler

accepts the 102 undocumented opcodes that work on the Z80. There is an automatic line numbering option which selectable start and step. The editor automatically formats the source code.

The assembly is 2 pass with stop on error or not stop on error with report after each pass, with optional list on screen or printer during assembly of object code information.

Once a piece of source code has been assembled you have to exit to BASIC and use the normal SAVE command to saved the code to disc or tape.

The handbook also gives a glossary of terms, technical information on memory maps and useful POKEs, block transfer of code for testing.

In my opinion, SC Assembler is ideally suited to a range of users, from the most novice to the most advanced.

SC Assembler is available on disc for £12.50 from:

Steve's Software,
7 Narrow Close,
Histon,
Cambridge,
CB4 4XX.
Telephone: (6pm to 9pm) 0223
235150

VERDICT

SAM Coupé

✓ Easy for beginners to get to grips with
Powerful enough for more advanced users
Good value for money

✗ Handbook really needs reading a couple of times before you can use the program
Crashy Spectrum emulator

85%

On-Line

Comms News

All the latest news and comment about the communications scene.

As reported in issue 4 of S&SC, Micronet was killed on 31st October 1991. It was a slow, lingering death - a death of a thousand cuts inflicted by a BT management which did not seem to understand what it was all about. Looking back, I think that there were two major BT decisions which led to Micronet's eventual demise - the introduction of time charges and the withdrawal of chatlines.

The imposition of off-peak time charges was a serious blow. The charge could be avoided by using the system between midnight and 0800 hours and that is what I and many others tended to do. However, the charge led to many people leaving Micronet and must have made it very difficult to recruit new members.

The withdrawal of chatlines seemed to be partly a consequence of the controversy over the "voice" partyline services and partly reaction to the undoubted abuse which did sometimes occur. I saw some things on Micronet chatlines which caused me some concern and I can understand that some regulation was required. Total withdrawal of the facility seemed heavy-handed and unnecessary. It should have been possible to find a satisfactory way of monitoring chatlines which would have enabled the vast majority of sensible users to enjoy the pleasure of chatting with other users around the country. Chatlines are the life-blood of a comms network and with their withdrawal, Micronet began to wither away.

I think that BT did not understand Micronet and so were not able to market it properly. As far as I know, it was only ever marketed to computer enthusiasts and yet there were areas of Micronet which could

have been enjoyed by anyone. Waveguide and the review section Xtra were good examples of this. It may be that there are simply not enough computer enthusiasts around to support a system like Micronet. Such systems need to appeal to a wider audience and there is really no reason why they shouldn't. Many people who could benefit from and enjoy using comms do not realise what is possible and suffer from technophobia. We computer enthusiasts may be partly responsible for this. We need to learn to express more clearly and to rid ourselves of an all too frequent tendency to patronise those who do not understand our jargon.

What is the future for the comms enthusiast? In early November, there are three systems struggling to rise from the ashes of Micronet. For those staying on Prestel there is Supernet. This has been set up as a Closed User Group. It costs £60 per year if you join before December 1st and £80 per year if you join after this date. These charges are in addition to the normal Prestel fees. Supernet does include an area called Sinclair Specnet. One of its editors is Brian Gaff who used to edit Micronet's Spectacular area.

The Silicon Village on 081 759 2348 and 0734 819000 is the new home of Waveguide and several other old Micronet favourites. It costs £6 per month. The first two hours of use each month is free. Thereafter 2.5p per minute is charged. There is also an initial registration fee of £10.

TAO (Tessier Ashpool Online) is on 071 275 9996 and is the new home of the multi-use game Shades. At present TAO has no connection charge and says it will not introduce any until at least January 1992.

Both Silicon Village and TAO are planning local access via the Mercury 5000

network. This highlights one of the great advantages enjoyed by Micronet which could always offer easy local access. You do not need to have a Mercury account to use Mercury 5000. It is likely to cost between 2.5p and 3.0p per minute in addition to any connect charges imposed by the system which is being used.

Silicon Village and TAO can be accessed using the same Viewdata software that was used to access Micronet, they both offer chatlines and an electronic mail system.

What is the comms enthusiast to do? I think Supernet is too expensive unless you make frequent use of Prestel's other facilities. It would be difficult to justify to Prestel just to use Supernet. I have closed my Prestel account and will be giving the Silicon Village and TAO a trial. I do wonder if the market is big enough for both these systems. I would be surprised if only one of them can survive. An analogy between Sky and BSB in the world of satellite broadcasting suggests itself. The next few months should be very interesting.

Steve Lamb

• If you are a member of any of the 'replacements' to Micronet then we are very interested to hear what you think of them.

CompuServe - is it really such a dead loss?

The closure in Micronet of course resulted in an offer of a membership package to CompuServe, the world's largest information service with over 800,000 members. While, a quick look around the system will find little or no interesting areas for Spectrum or SAM users, for users of CP/M (i.e. Spectrum +3 users and soon SAM users courtesy of BG Services' ProDOS) the CP/MForum is of great interest. Not only can you get in touch with thousands of CP/M users around the world, but there are hundreds of CP/M files to download. With CP/M being a fairly standard

platform across many different computers, there will be a large majority of files which will work on either Locomotive's CP/M software or BG Services' ProDOS.

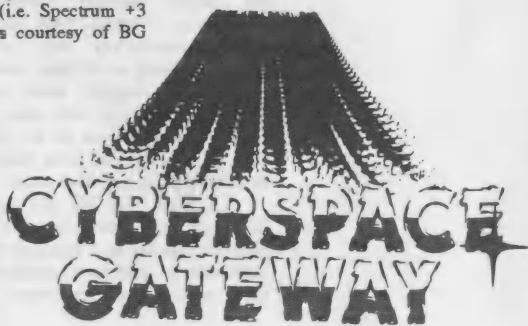
New On-Line Database

The Cyberspace Gateway is a new on-line service which claims to be "the most advanced infotainment system in Europe. Access is via a single London node at 300,1200 or 2400 baud (8N1 ANSI scrolling) with membership costing £10 per month or £99 for a year, with payment by cheque, Access or Visa credit cards.

The Cyberspace Gateway features a 6 Gigabyte file area with educational, business, general and image files to download, multi-player on-line games, chatlines, conferences to take part in, on-line shopping facilities, classified advert database, e-mail facilities, and much more.

What's more, the first 1000 callers will receive free membership for one month, so call 071 580 6433 to sample the system, or contact Cyberspace Gateway on their voice number of 071 323 1552 or at 1 Malcom Drive, Surbiton, Surrey, KT6 6QS.

If you have any comments to make about the communications world or would like to rave about your favourite bulletin board (especially if they support the Spectrum or the SAM Coupe) then please write to us, we'd love to hear from you. The address is, as always, Garner Designs, 57 Lovers Walk, Dunstable, Bedfordshire, LU5 4BG.



The source of technical information for the Spectrum Plus 3.

Introducing *The Plus 3 Technical Source*, the definitive source of technical information for the serious Spectrum +3 user.

The Plus 3 Technical Source represents a compilation of all the technical article articles published in +3 Contact - the magazine Garner Designs published before Sinclair & SAM Computing.

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- A complete guide to using Mallard BASIC under CP/M including advanced programming techniques, hints and tips and more.
- Type-in bug fixes for Artist 2 and Music Writer.
- Programming techniques to make full use of the Plus 3's extended memory pages.
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PART 3

- Patch program which enables colour printout from within Artist 2
- Technical information on Music Writer, including a technical description of the file format of MSC files.
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nb. Not a PC emulator.

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C PROGRAMMING

Our programming tutorial continues with a look at several programming do's and don'ts with example programs to explain the methods used.

Break is a very useful statement for those people who don't want to use a goto to 'break out' of a loop, as shown in the example below.

```
#include <stdio.h>

/*this routines reads a digit string and
returns value of it*/

main ()
{
    int c,result,signed;

    signed = 0;
    result = 0;
    c = getchar();

    while (c=='-') /*process minus
number*/
```

```
signed = !signed;
c = getchar();
```

```
while (c !=EOF) {
    if (c<'0' || c>'9')
        break;
    result = result*10 + c - '0';
    c = getchar()
}
if signed
    exit (-result);
exit (result);
}
```

Most programmers vehemently try not to use the goto statement in their programs. After all, most programmers advance upto C, and with the goto statement only being included in the language so 'less able' BASIC programmers could get to grips with the language, to use of goto is seen by

most C programmers as 'defeat'!

However, while you are learning how to use C, there are just some situations when you can see no other course than to use the dreaded 'g' word.

The following example shows the statement in use:

```
while (x==y) {
do {
    if (x < 10)
        goto nexttrout;
}
x=x++;
}
exit(0);

nexttrout:
x=x--;
exit(1);
```

Compared to many languages C is very structured. However, all beginners learning a structured languages have trouble selecting or recognising when to use a particular type of loop.

In C, the 'for' statement is very powerful. A set of complex instructions can be compounded into a single 'for' statement. However, many programmers new to C shy away from more advanced use of 'for' due to its complex format.

Shying away from it at an early stage will mean that you won't learn to use its full power later on when you are more advanced.

To illustrate the 'for' statement's powerful, yet compact syntax, take a look at the following example.

```
for (x=1; x<20; x++)
    printf ("%d\n", x);
```

The above is equivalent to:

```
.
x=1;
while (x<20) {
}
    printf ("%d\n", x);
}
x++;
}
```

As you can see, the operation is very much more compact when you use the 'for' statement than the 'while' statement.

With there being a few implementations of the C language available for the Spectrum and also via CP/M on the SAM and Spectrum +3, it is always important to find out right from the start how 'complete' your implementation is.

Various versions contain slightly different standards for program entry, etc, while others (such as CP/M's Small 'C') only contain 'subset' of the entire language.

One main limitation is that of the data types your version of C uses. These can be checked using the pseudo-function 'sizeof' - assuming your version supports it! The sizeof function simply returns the number of bytes which are used by a variable or data type. The most common use is: `x = malloc (sizeof(*x));`

However, using the fairly common SIZES program you can use it to check how accurate your program's numeric system is as described in the last paragraph.

```
#include <stdio.h>
```

```
main()
```

```

{
printf ("\n");
printf ("Type Size in bytes\n");
printf ("-----\n");
printf ("char %d\n",sizeof(char));
printf ("unsigned char
%d\n",sizeof(unsigned char));
printf ("short %d\n",sizeof(short));
printf ("unsigned short
%d\n",sizeof(unsigned short));
printf ("int %d\n",sizeof(int));
printf ("unsigned int
%d\n",sizeof(unsigned int));
printf ("long %d\n",sizeof(long));
printf ("unsigned long
%d\n",sizeof(unsigned long));
printf ("float %d\n",sizeof(long));
printf ("double
%d\n",sizeof(double));
printf ("char * %d\n",sizeof(char *));

return 0;
}

```

If you plan to port a C program over to another computer, then the above program will be invaluable in ensuring that you do not have to re-code the program to take account for different data storage methods and such like. The program is also useful as it will throw an error at you if one of the particular data types is not supported by your particular implementation of C.

One of the 'stock' routines which C programmers usually type in to see how loop structures work is the factorial routine.

```
#include <stdio.h>
```

```
fact (j)
unsigned int j;
```

```

{
if (j==1)
return (1);
else
return(j*fact(j-1));
}

main()
{
unsigned int i;
for (i=1; i<=8; i++)
{
printf("%d\n",i, fact(i));
}
}

```

All good things must come to an end

Issue 7's C Programming column will be the last in this series of tutorials. While we hope that we've covered the basics of the language, if there is anything which you need clarifying or there is a part of C which you want us to cover then please write to us **AS QUICKLY AS POSSIBLE** so that we have time to include it. We'll do our very best to oblige with all requests we receive.

Those readers who have missed the previous C Programming columns can of course obtain copies of the magazines from our back issue service, details of which can be found on page 56.

Although there are only a handful of languages other than BASIC available for the Spectrum, the advent of CP/M on the Spectrum +3 and now the SAM Coupé has meant that there is a new range of language compilers and interpreters available. For this reason, we will be starting a Pascal Tutorial series for both beginners and more competent programmers in issue 6.

Help!!

Have you got a technical problem which needs an answer fast? If you do, then write in or call our technical helpline. Whatever the problem, we'll put you on the right track.

I've just picked up a Serial 8056 printer second-hand. Unfortunately it didn't come with a manual and I can't get it to work properly. Help!!

The Serial 8056 is a strange oddity of a printer. It came into this country via IBM who dumped thousands of them onto the UK market. The high-street chain Dixons bought up the stock wholesale and started to bundle them with Spectrum 128s and Sinclair QLs. The printer itself was doomed to failure; it had a non-standard connector and it used the thermal printing method which requires expensive paper.

The printer is Epson-compatible to some extent although graphics output is not directly available.

As we'd had a couple people ring about how to get the 8056 printer working properly, we obtained a manual for the printer, and sent them a photocopy. However, with the printer's second-hand price being as low as £25 we soon had more people contacting us who had purchased one either with or without the manual.

If there are any more 8056 owners out there, here's some information which you'll find very useful.

The 16 pin connector is wired as follows:

Top 8 pins -
T01 - not used
T02 - Data Terminal ready is connected to T06 Data Set Ready
T03 - Request to Send is connected to T05 Carrier Detect
T04 - Transmit Data
T07 - Clear to send

Bottom 8 pins -
B01-B03 - not used
B04 - Ground
B05-B06 - not used
B07 - Ground
B08 - Not used

The following are all the commands the printer recognises:

Cancel: LPRINT CHR\$(24); This clears the printer's buffers and reinitialise the printer to its power on defaults.

Carriage Return: LPRINT CHR\$(13);

Compressed Off: LPRINT CHR\$(18); Turns compressed mode off.

Double Width Off: LPRINT CHR\$(20); Turns double width mode off.

Escape: LPRINT CHR\$(27);

Informs the printer that the following data is a printer command.

Set Vertical Tab: LPRINT CHR\$(27);CHR\$(66);CHR\$(10); CHR\$(tabpos);CHR\$(0); Upto 20 vertical tabs can be set up. The

NUL (CHR\$(0)) ends the tab list. Lines Per page: LPRINT CHR\$(27);CHR\$(67);CHR\$(lines perpage); Set the page length. Default is 66.

Set Horizontal Tab: LPRINT CHR\$(27);CHR\$(68);CHR\$(10); CHR\$(tabpos);CHR\$(0); As with the Vertical tabs except the tabs are for horizontal movements.

Skip Perforation: LPRINT CHR\$(27);CHR\$(78);CHR\$(lines) ; This sets the number of lines to be skipped at the end of a page.

Cancel skip perforation: LPRINT CHR\$(27);CHR\$(79);

Clear All Tabs: LPRINT CHR\$(27);CHR\$(82);

Double Width: LPRINT CHR\$(27);CHR\$(87);CHR\$(x); Sets double width printing mode. Turned on when x=1 or turned off when x=0

Escape Zero: LPRINT CHR\$(27);CHR\$(48); Changes the line feed to 2.82 mm (1/9 inch).

Escape One: LPRINT CHR\$(27);CHR\$(49); Same as escape zero.

Escape Two: LPRINT CHR\$(27);CHR\$(50); Resets line spacing to 4.23 mm (1/6 inch).

Escape Five: LPRINT CHR\$(27);CHR\$(53);CHR\$(x); Sets automatic line feed. Turned on when x=1 or turned off when x=0.

Underline: LPRINT CHR\$(27);CHR\$(45);CHR\$(x);

Turns underline mode on when $x=1$ or off when $x=0$.

Home Head: LPRINT
CHRS(27);CHRS(60); Send head to left margin.

Form Feed: LPRINT CHRS(12);
Horizontal Tab: LPRINT
CHRS(0); Jump to next horizontal tab.

Line Feed: LPRINT CHRS(10);
NUL: LPRINT CHRS(0); Used as a terminator for the tab set and clear commands.

Compressed On: LPRINT
CHRS(15); Turns Compressed Character mode on.

Double Width on: LPRINT
CHRS(14); Turns Double width mode on.

Vertical tab: LPRINT CHRS(11);
Jump to next vertical tab.

I've seen CP/M public domain disks advertised, and would like to know exactly what CP/M is.

Well, CP/M on the Spectrum +3 has been a shady area. The authors of the DOS in the +3, Locomotive Software produced a version of the CP/M operating system for the +3. However, then did not (and indeed now do not) advertise the program in magazines, although it is available.

CP/M stands for Control Program/Monitor and is an operating system used mainly during the seventies on a wide range of computers. Amstrad adopted the language for use in their PCW and CPC ranges before bringing it to the +3 via Locomotive software who also wrote the CPC implementation.

The good thing about CP/M is that it is a standard operating system and so a CP/M program for one computer will theoretically

work on any other computer running CP/M.

The +3 version of CP/M is called "CP/M Plus" and comes with a program called Mallard BASIC which is version of the BASIC language which is both faster and more accurate than +3 BASIC. There is a vast number of CP/M programs available cheaply through public domain sources.

CP/M Plus is available from Locomotive Software (address) for around £30. Although this sounds expensive, it really does open up a vast new 'untapped' pool of programs.

As well as the +3, SAM now also has a version of CP/M available for it. Called ProDOS, the program brings the same vast range of software to the SAM. Contact BG Services (081 297 0763) for more details.

- Spectrum +3 users may like to know that our new Plus 3 Technical Source contains an entire section devoted to CP/M.

Is it possible to use the Canon BJ10e bubble-jet printer with the Spectrum? I know that it is Epson compatible and has a Centronics interface.

Well, although no one here has had experience of this particular printer, I imagine that you'll have no problem in using it with your Spectrum.

As the printer is both Epson compatible and has Parallel printer port, you'll have no trouble linking it directly to the Spectrum +3, or via an interface to another Spectrum, or to a SAM Coupe.

For the majority of work, an inkjet like the BJ10e will yield

extremely nice results because of its 360dpi output. However, I suspect that the Epson compatibility is for the LQ range of Epson printers, rather than the FX range.

Although this won't cause much difficulty with text printing from word processors, you will find that graphics output may not be too good as the Epson 24-pin LQ emulation of 9-pin graphics output is a bit ropey. Some experimentation may be in order.

I have a Brother HR5 printer which I am trying to use to print screens from the Artist II (Spectrum +3 version). However, whenever I try to print another, using any of the print options, all I get is a mess. Is there any way around this problem?

Well yes there is, and this is actually a question which was answered way back in issue 15 of +3 Contact, but for those who weren't members of The +3 Users Group, I'll detail the 'fix' again.

Firstly, the problem is not really due to any kind of bug in the Artist II, but it is more a deficiency of the program. There is also nothing wrong with your printer, except that although the Brother HR5 claims to be Epson compatible, it only recognises a sub-set of the Epson control codes. Unfortunately, one of the control codes the HR5 doesn't understand is that which the Artist II uses to set an attached printer to graphics mode. I imagine that the programmer than all Epson 'compatible' printers recognised the ESC * control code, which allows the printer to jump into a particular graphics mode. They

Help!!

don't.

For example, LPRINT CHR\$ 27; "*" ; CHR\$ 1; CHR\$ 100; CHR\$ 0; has exactly the same result as using LPRINT CHR\$ 27; "L"; CHR\$ 100; CHR\$ 0;. However, the latter method will be recognised by all Epson compatible printers (including the Brother HR5) whereas the former method is not recognised by the HR5 (and I suspect other printers too).

Therefore, while Artist II believes it has set up the printer to graphics mode and thus sends streams of graphics data. Meanwhile, the HR5 is wondering what on earth Artist II is asking it to do, but before very long streams of data is bombarded at it which the printer can only assume is text and thus prints it as such. Result: a page full of mess with the artistic merit of a brick.

The answer to the problem however, is straight-forward. The following list of POKEs (which can be incorporated into the Artist

II's basic loader program) do the job nicely.

POKE 65023,10: POKE 65005,32:
POKE 65006,32: POKE 65014,32:
POKE 65015,27: POKE 65016,76:
POKE 23354,62: POKE 23355,16:
POKE 23399,20

re-save the basic loader program using SAVE "DISK" LINE 10. It may be an idea to try this on a copy of your Artist II program rather than running the risk of saving over your original files. By the way, the final three POKEs are the famous (or should that be infamous?) 'Printer Pokes' which many Spectrum +3 users will know as being the POKEs which stop the annoying tendency of the +3 to miss out lines while printing. Please note that the above has been tested on the Spectrum +3 version of the Artist II (the only version we possess), and so may not work on the other versions.

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Please entire an SAE for a speedy reply. Help us to help you - please enclose all the relevant information, including any things you've already tried, listings, photocopies of instructions, etc. In this way, we can answer your question more accurately.

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Wanted Z80/Spectrum Assembly Code programmer, to write software part time for hardware projects currently being designed. Aim to sell and split profits. Hardware experience helpful but not required. If interested Tel: Mike 0942 831925.

I enclose my subs for the next six months. May I add how much I look forward to each monthly issue of OUTLET coming through the post box and how delighted I am with the contents. J.W.

.. OUTLET is undoubtedly the most intelligent and interesting magazine for the Spectrum - please keep up the good work. 151/00

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... my thanks for the many pleasurable hours I have had with your tapes ... I hope you go from strength to strength. 175/25

Thanks a lot for the excellent OUTLET No.835 disk for SAM ... I was fascinated with all the information and demonstrations. The SAM information will be especially helpful to me ... thanks again for all your efforts. 169/38

... I... at publication, 172/86

of OUTLET. The... t running... s. Thanks for... o letters 177/83

.. MUST say how impressed I am with the ever increasing quality of OUTLET ... for example PROCROSS was, in my opinion, one of the best utilities for the Spectrum I have ever seen. 182/33

I found your software easy to use, useful and enlightening 195/78

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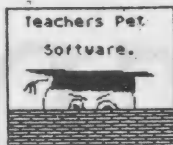
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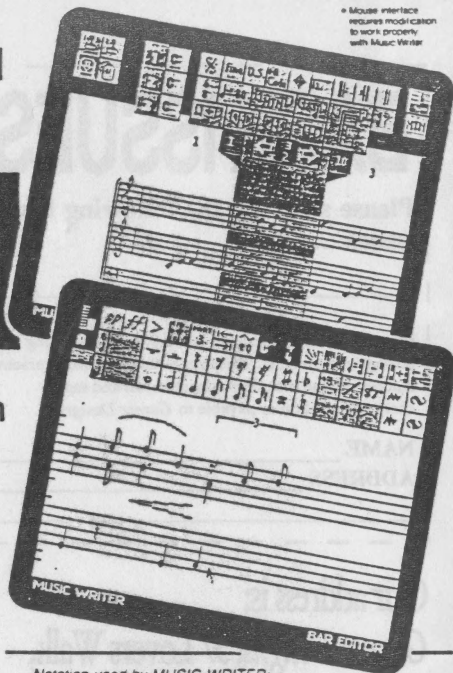
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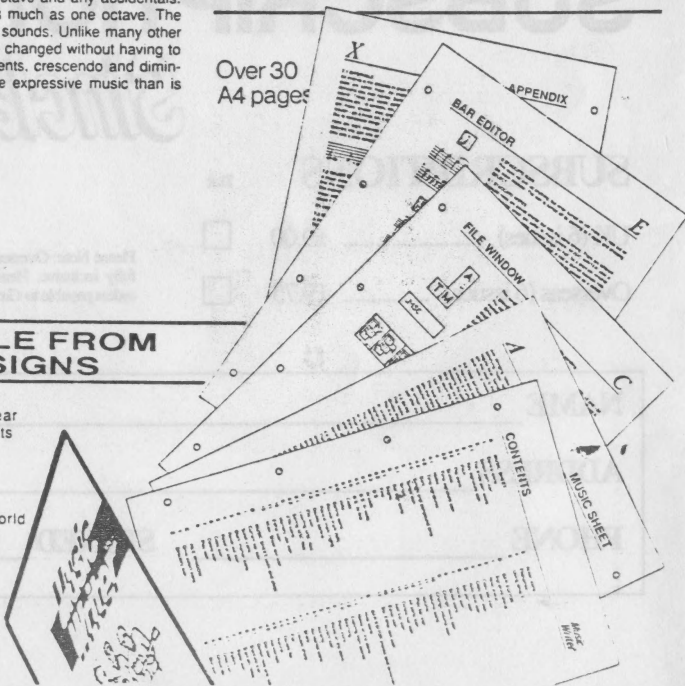
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